THE EFFECTS OF URBAN REDEVELOPMENT ON HOUSEHOLDS

by

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Abstract

Many municipalities are beginning to play a more central and active role in slowing and reversing the process of the economic stagnation of business and commerce within their cities. Many municipalities combat these problems through the use of providing existing businesses or start up businesses with financial assistance or incentives. Economic theory shows us that a firm's decision on production and location is influenced by fiscal incentives that are afforded to them (Fisher, 654). This paper explores the external effects of municipally assisted redevelopment programs. This analysis strives to broaden our understanding of businesses redevelopment programs to include not just the impacts on the commercial side, but see the total effects which include the residential side as well. It analyzes key economic indicators of households who reside within and directly around publicly assisted redevelopment areas and compares these indicators to their non-redeveloped area counterparts. Specifically, it empirically examines the impact of redevelopment on house values and unemployment rates in seven large Midwestern cities: Des Moines, Wichita, Kansas City, St. Louis, Lincoln, Omaha, and Milwaukee, using census data at the block group and census tract levels. I find that redevelopment has a substantial impact in increasing house values and reducing unemployment rates in the vicinity of the redevelopment projects.

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Dedication

To my friends and family.

CHAPTER 1 - Introduction

The physical and economic stagnation of business and commercial districts has become more of a central concern to municipal administrations throughout the nation in recent years. Anyone passing through the central downtown area of any large or small city knows that deterioration is all too common. Because of this, many municipalities have began to play a more central and active role in slowing and reversing this process. As Robinson (1989) shows, many municipalities combat these problems through the corporate-sector approach which focuses on economic growth by providing existing businesses or start up businesses with financial assistance or incentives. These programs include either direct assistance to businesses such as low interest loans, subsidizing costs or tax abatement policies, or indirect assistance such as improving the surrounding infrastructure.

In fact, most cities find it increasingly necessary to provide these incentives, or economic development finances, just to remain as a competitive and attractive place for business and commerce to locate and grow. Economic theory shows us that a firm's decision on production and location is influenced by fiscal incentives that are afforded to them (Fisher, 654). Although there is already extensive literature and analysis on how these business programs affect firms, very few explore the indirect effects of these programs on households. My hope in this analysis is to broaden the picture of business redevelopment programs to include not just the commercial side, but see the total affects which include the residential side as well.

To examine how redevelopment affects households, I focus on two indicators of household wellbeing: house values and unemployment. For existing homeowners, rising property values translates into greater wealth (Turner and Luea, 2009). The common question of whether or not redevelopment creates job opportunities is also a central concern to my analysis. I find evidence that suggests that redevelopment does indeed enhance the employment opportunities of residents within the revitalized area.

I analyze the impact of redevelopment at the block group and census tract levels. To do this, first I contacted seven cities to request information on what areas of their cities have had municipal assisted redevelopment. From each city, I receive the locations of any redevelopment activity taking place between 1990 and 2000, which I use in combination with thematic maps provided by American FactFinder, to code indicator variables at the block group and census tract level indicating which blocks and tracts in each city were redeveloped between 1990 and 2000, and which were not. To this data, I add in block group and census tract information from the 2000 Census Summary File 3, indicating the demographic and income characteristics of these areas. I then take an econometric approach where I analyze the effects of redevelopment on house values and unemployment rates (at both the census tract and block group level) while controlling for other economic determinants using the 2000 census data.

In my study, I analyze economic effects at the census tract and the block group levels since these are the most detailed levels the U.S. Census Bureau provides for public use. The U.S. Census Bureau (2009) defines a census tract as:

> "...small, relatively permanent geographic entities within counties (or the statistical equivalents of counties) delineated by a committee of local data users. Generally, census tracts have between 2,500 and 8,000 residents and boundaries that follow visible features. When first established, census tracts are to be as

> homogeneous as possible with respect to population characteristics, economic status, and living conditions" (*Census Tracts…*, 10-1)

The U.S. Census Bureau (2009) describes a block group as a geographical subdivision of each census tract, (*Glossary*). Since the block group and census tract are the smallest and second smallest, respectively, geographic level that the U.S. Census Bureau provides sample data for, I conduct analysis at the block group level as well as the census tract level to identify only redevelopment effects.

I only choose to examine public redevelopment for two reasons: first, because while private industry's only goal is to serve their own interests, as an entity serving the common welfare, the public body should be aware of the entire affects of their decisions regarding the community they serve; second, records of redevelopment projects are, for the most part, much easier to attain from public entities than to track down and inquire upon every single private redevelopment project a city with a population over 150,000 over a ten year period has undergone. A more defined definition of the projects I examine would be any program used to redevelop an area of a city in which the city administration plays a role, either in part or in whole, for commercial or mixed use purposes (i.e. tax increment financing (TIF), tax abatement programs, infrastructure improvements, gap financing). Understanding the differences between private and publicly assisted redevelopment, I will hereafter in my study only be referring to publicly assisted redevelopment projects and call them redeveloped areas for simplicity's sake.

The remainder of the paper is organized as follows. Chapter 2 provides a review of the existing literature pertaining to the impacts of city redevelopment. Chapter 3 reports what data I use for my analysis and the reasons why. Chapter 4 explains the

econometric approach I use in my study and the reasons why. Chapter 5 reports the empirical results of my analysis, and chapter 6 discusses the conclusions of my findings.

CHAPTER 2 - Literature Review

In order to effectively assess the effects of publicly assisted redevelopment policies, I first review the literature from eight studies that are pertinent to my discussion of the economic impacts of urban redevelopment on households. In brief, I find the following implications of existing literature. Anderson's (1990) empirical evidence shows that cities which use redevelopment in the form of Tax Increment Financing (TIF) have a higher property value growth than cities that do not use TIF. This leads me to predict that redevelopment projects will improve property values. Boarnet (2001) critiques and explains what methods of analysis are most credible when trying to examine the affects of public enterprise zone programs. He makes recommendations on what and how best to account for all other attributes that may skew econometric results. This is why I control for as many characteristics that may impact the economic wellbeing of residents as possible, as well as city fixed effects. Bostic and Prohofsky (2006) select their control group to ensure that as many things as possible are ceteris paribus. This is why I limit my study to cities that are homogeneous in as many ways as possible. Bostic and Prohofsky's results demonstrate that tax abatement programs had a correlation to the wage increases for employees of the firm. For this reason I believe that there is a "trickle down affect" to households that might be seen more clearly if more extensive research is conducted.

In contrast to Anderson, Carroll and Sachse (2005) suggest that redevelopment may lower property values. Projects such as mixed-use and industrial TIF districts which

do not improve public services would initiate a household flight incentive. Their findings suggest that residential property located in a redevelopment district will lower property values unless the improvement provided by the redevelopment provides services that directly benefit the residents, in which case it will cause property to become more desirable. This shows me that redevelopment projects will impact residents' location decisions and property values. The impact of redevelopment on the make up of neighborhoods is examined by Gladstone and Preau (2008), who show that public infrastructure improvements affect the socioeconomic makeup of neighborhoods. They find that improvements often increase the property values of blighted areas because redevelopment brings in higher income individuals and thereby forces out lower income individuals (i.e. gentrification). This happens at a very small block-by-block basis, which is why I use as detailed an analysis as possible given the data that is available (at the block-group level) and examine variables which would indicate if any type of gentrification is occurring because of redevelopment.

Robinson (1989) shows that economic development in many U.S. cities follows the corporate-center strategy, which is where administrations only focus on promoting economic growth at the heart of the city. This is why I believe my study need only to be concerned about central business district redevelopment since this is the most popular type of redevelopment. Rosenthal's (2008) evidence indicates that neighborhood economic status changes over long periods of time. Results show that the neighborhood socioeconomic composition also contribute to the economic status of neighborhoods. This study reinforces the need to control for socioeconomic characteristics and the age of housing units when determining house value. Finally, Tsoodle and Turner's (2008) city

level analysis of Midwestern cities over time shows that higher property taxes result in higher housing rental values, all else equal, suggesting that policies that affect house values in the Midwest are transmitted to renters in the form of changing rents. This suggests that redevelopment likely also raises rents, though this is not a topic I examine in this thesis. The remainder of this section provides in depth reviews of these studies.

Anderson (1990)

Anderson's (1990) study examines how and why cities in the U.S. use TIF for economic development projects. Anderson seeks to determine if cities using TIF implementation can be predicted and if these programs produce any real stimulus effects on the cities that use them. The main focus of Anderson's study is to examine whether the likelihood that a municipality creates a TIF program is related to the city's potential property tax base growth. Anderson also tests to see if earlier population growth of a city affects the decision to implement the TIF program because TIF may be linked to population growth not stimulus growth. He tests to see if TIF implementation is a substitute income for high property taxed cities; whether the status of school funding affects TIF implementation; and if the tax rate fraction of total local property tax rate affects TIF implementation.

Anderson uses data taken from Michigan Department of Treasury annual reports in 1985 and 1986 on TIF activity throughout the state and combines it with a 1985 data set on 255 Michigan cities (63 of which had TIFs) to estimate his model (Anderson, 156). Anderson uses a structural probit model to estimate the effects of TIF programs on city property value. He uses two equations to model property value growth of cities, one for cities without TIFs and one with TIFs. These are shown below:

TIF Cities: $y_{1i} = \beta_1' X_{1i} + u_{1i}$ (1)

Non-TIF Cities: $y_{2i} = \beta_2' X_{2i} + u_{2i}$ (2)

Where y_i equals the city's property value growth rate, X is a vector of observations of factors that affect the property value growth, β' is a vector of coefficients and u is an error term (Anderson, 155). Anderson first examines whether the β coefficients are statistically different from each other in order to determine if property value growth is different between TIF and Non-TIF cities using an F test. Testing data from a city in Michigan reveals F is 26.64, in which case Anderson can reject that the βs are the same (Anderson, 156). To ascertain whether a city uses or does not use TIF, Anderson uses a criterion function which is shown: C_i equals $\alpha' Z_i + \delta(y_{1i} - y_{2i}) + u_i$ (3), Anderson uses a dummy variable I_1 which takes on the value of 1 when C_i is larger than 0 and a value of 0 when C_i is equal to or smaller than 0.

Here, $y_{1i} - y_{2i}$ shows the difference in growth of property values between TIF and Non-TIF municipalities. Anderson has to estimate the difference of $y_{1i} - y_{2i}$ for all cities since only one or the other is observed in each city. Z represents a matrix of observations for factors that influence whether cities decide to have TIF programs or not. Both α and δ are parameters to be estimated. The significance of δ shows us that if δ is positive, then the city is more likely to use TIF programs because it's more successful in increasing property value. This is required to set up a probit model. However, the error terms in the preceding three functions are correlated because the expected values of the errors are not zero. Therefore, Anderson corrects this by

> "including selectivity variables, measuring the truncation effect which results from the sample selectivity involved, in the OLS regressions of property value growth. The selectivity variables are defined as

$$W_{1i} = f(\delta'Z_i)/F(\delta'Z_i) \text{ and } W_{2i} = f(\delta'Z_i)/[1 - F(\delta'Z_i)]$$

where f and F are the standard normal density and distribution functions respectively. Including these selectivity variables in equations (1) and (2) gives

$$y_i = \beta_1'X_{1i} - \sigma_{1u}W_{1i} + u_{1i} \quad \text{for } I_i = 1 \quad (4) \text{ and}$$
$$y_i = \beta_2'X_{2i} - \sigma_{2u}W_{2i} + u_{2i} \quad \text{for } I_i = 0 \quad (5)$$

where and are the new residuals with zero conditional means $u_{1i} + \sigma_{1u}W_{1i}$ and $u_{2i} + \sigma_{2u}W_{2i}$. Estimation of the model begins with a reduced form probit estimation of the criterion function. Next, equations (4) and (5) are estimated to determine estimates of $y_{1i} = \beta_1'X_{1i}$ and $y_{2i} = \beta_2'X_{2i}$. The difference in the estimated y's is then used as an explanatory variable in estimation of the structural probit equation" (Anderson, 156).

The X matrix in equations (4) and (5), includes population changes of cities' from 1979 through 1982 (which measures population change prior to TIF implementation); the level of population of a city in 1982 (because larger cities have a greater changes in property values); and because the effect of population size might not be linear he adds the square of the population to capture non-linear effects. He also includes a dummy which is 1 if the city is a central city and 0 otherwise because these central cities tend to have conditions of which TIFs are more suitable for; and because cities with a larger proportion commercial property tend to have a larger need for TIFs for public infrastructure improvements, he includes a variable which shows the percentage of the property value of a city that is of a commercial type (Anderson, 157).

The Z matrix in equation (3) includes the property tax mill rate as a proportion to the total mill rate because cities that stand to have the most gain from TIF programs are those that have low tax rates comparatively to the total tax rate of the city because it is a way to raise more revenue. Because schools receive the largest share of mill revenues, the variable is also included to look at whether the school district is out-of-formula;

municipal TIF implementation is affected by this because when school districts are in-formula, the state subsidizes the difference in the lost TIF revenues, hence influencing the decision. Lastly, Anderson includes which is the estimated difference between the property value change under a TIF system and the property value change in a non-TIF system (Anderson, 158).

Anderson's empirical evidence shows that cities which use TIFs have a larger property value growth than cities that don't use TIFs. Statistical analysis finds that this is only true after controlling for a city's size effects, change in population, property mill rates, and other factors. The estimated difference in property value growth in TIF and Non-TIF areas is a statistically significant element to the decision for a city to implement a TIF program (Anderson, 161). Testing the significance of factors shows that the status of school districts' funding, high overall property tax rates, or relatively low property tax rates in relative to total tax rates of a city are not significant factors in determining TIF implementation. However, Anderson points out that this does not prove that property value growth is due to TIF implementation, but just that TIFs are used by cities that grow faster (Anderson, 162).

Boarnet (2001)

Enterprise zones were first formed as a way of using targeted tax discounts and institutional transformations in order to promote job growth in focused areas. The popularity of this concept increased so much that by 1993, the United States established a federal enterprise zone program. But this popularity rose out of theoretical arguments and was never actually substantiated. The main reason for this being that there has been

no studies offered to show what would have happened in an area had the EZ not been created. Therefore, Boarnet (2001) tries to offer insight to this question (Boarnet, 242).

Boarnet analyzes what evaluation criteria is creditable and should be used when scrutinizing the successfulness of enterprise zone (EZ) programs. Specifically, his paper examines the systematic issues associated with appraising enterprise zones; how to separate regional economic fluctuations from the economic effects of local policies; what data should be used to best evaluate EZ programs, and ways to strengthen the link between research evidence of economic programs and the political process (Boarnet, 242).

Boarnet says that one of the most important aspects that is often overlooked when assessing EZ benefits, is being able to understand what would have happened in a location had the EZ never been established. Because economics is not in a controlled environment, the public tends to be against economic experimentation and economists are unable to travel back in time to see "what would have happened." However, by randomly separating subjects into either a control group or an experimental group, Boarnet notes that a person can approximate the effects of the experiment. Randomization on a large scale hopefully creates two groups that are similar enough in all other aspects so that any significant difference in the two groups can be credited to the experiment. In the real world, it is much harder to conduct such an experiment with EZ when the sites for development are politically not randomly chosen. Boarnet notes that key points that should be explored include: that the evaluation provide sound evidence that changes in the effected zones are due to the EZ program and not outside factors; that

controlled trials of EZ projects can be conducted; and that there exists a credible control group which is used in the study (Boarnet, 243).

Boarnet analyzes places that do not have enterprise zones in three ways: (1) The Shift-Share technique which looks at the effects from natural growth, industrial mix, and unique regional contributions. This approach creates a control group from the surrounding region. The advantage of this method is that only requirements are data from two points in time. However the drawback to this method is that it doesn‘t provide tests for statistical significance and it doesn't take into consideration that other unique factors (outside of industrial mix and regional contributions) may contribute to the differences in the economic growth rates of the test group and control group (Boarnet, 244). (2) The Quasi-Experimental Control Group Method tries to choose for its control group areas that do not have enterprise zones but meet all the qualifications for being eligible for an EZ, so as to ensure the two groups are as similar as possible. However, the shortcoming of this approach occurs because EZ are never randomly chosen so that there must be some inherent difference between areas that become zoned and those that don't (Boarnet, 244-245). (3) The Econometric Controls for Nonrandom Zone Selection method attempts to econometrically control for all important differences between the control and study group cities. It uses an econometric model that factors all the important independent variables in order to control for city differences so one can see the change in the dependant variable "when all else is equal." Some of the important factors Boarnet explains are a dummy variable if the city has an EZ, a unique intercept for each municipality to account for each city having a different level of employment, a unique coefficient for each municipality to account for each city having a different linear rate of

growth for employment, and also incorporating a time-series element in order to account for unique circumstances and events that occur at specific time periods that may affect the economic aspect of the municipality (Boarnet, 245-247).

Boarnet notes that an additional hurdle to effectively evaluate EZ is finding the correct data which is not always easily available for three reasons. The first being that geographic areas where data is available do not correctly correspond to EZ boundaries. The second being the there is typically a difference between the job level in the zoned area and employed residents in a zone. The third being that all the outcome data for zoned areas must be able to be compared to outcome data for non-zoned areas (Boarnet, 248-249).

Boarnet also mentions the need for a stronger link between research and politics. Creation of EZ are politically motivated and so the decision to proceed on a project is usually made before all pertinent information is known. Also, those who are in charge of creating the policy don't always have a strong understanding of what research is of reasonable quality and which aren't and so are dismissive of research if there are ever conflicting viewpoints on the subject (Boarnet, 249). Boarnet advises that researchers should diligently converse with policy makers on what types of procedures and data are credible and that the academic world should not unreasonably expect a complete and immediate turnabout toward following sound scholarly procedure. In which case, it is imperative for researches to innovate and improve upon the inefficient policies that are created (Boarnet, 250).

Bostic and Prohofsky (2006)

The purpose of Bostic and Prohofsky (2006) is to decipher the employment impacts on California workers hired under the California Enterprise Zone Program. Specifically, the authors try to answer the question: If Enterprise Zones (EZs) caused job growth, *how did this increase in demand affect workers wages*? They test the hypothesis, controlling for factors such as household characteristics and broad economic trends (Bostic and Prohofsky, 175).

According to Bostic and Prohofsky the design of the EZ program is based on the theory that firms change their decisions on where to locate or what invest in as a response to the changes in their taxes (an expense to them). Hence, economic theory suggests that the EZ program should lead to an unambiguous increase in the output of a zone but an ambiguous result on the effects of wages and employment (Bostic and Prohofsky, 176). Their analysis is based on California's EZ program. Bostic and Prohofsky specifically look at the EZ hiring credit whereby employers receive tax credit for each employee hired who meets the following criteria: they are hired after the implementation of the zone, they spend at least 90% of their work time directly connected to the business located in the zone, they perform at least 50% of their work within the zone, and they are eligible for participation in the Targeted Jobs Tax Credit programs, Greater Avenues for Independence Act, or the Job Training Partnership Act at the time they were hired (Bostic and Prohofsky, 179). The credit received for each qualified employee is a tax credit of 50% of the lower of either (1) the employee's actual wage or (2) one and one-half times the minimum wage for the employee's first year of employment. This percentage is reduced by 10% each year until it is phased out after five years (Bostic and Prohofsky, 180).

Bostic and Prohofsky identify workers who have been hired as part of the EZ program from two data sources. The California Department of Trade and Commerce (CDTC) provided a list of all workers registered by their employers in two of the EZs in 1995. An additional list of employees is provided by the Franchise Tax Board (FTB). A total of 135 individuals from the CDTC and 50 individuals from the FTB are identified and used in creating the study group. Information on filling status, number of dependents, AGI, earned income tax credits, earned wages, and residents location are collected from available California and federal tax returns filed from 1993 to 1997 for each of the individuals in the study group. This provided the authors data for each of the individuals in the study group before and after participation in the EZ program (Bostic and Prohofsky, 182).

In order to separate the effects of the program from outside economic factors, the authors use a control group. Because the study group was a non-random sample of participants, the authors restrict the control group to match the characteristics of the study group. The available data led them to create two control groups: (1) non-participants who had similar economic status at 1995, the beginning of EZ program and (2) non-participants with similar economic circumstances in each of the two years prior to the beginning of the EZ program (Bostic and Prohofsky, 180). This second group is created so that the sample looks similar to the participant sample prior to the participants entering the program. They matched each individual in the study group with individuals in the control group and required these control group matches to have the same tax filing status, number of dependants, reside in the same zip-code area and that that zip-code area have the same ethnic composition, poverty profile, and income profile as the study groups ZIP

(Bostic and Prohofsky, 182). For each EZ participant, the authors required that the matched controls come from any of five zip-codes most similar to their own. The top three matches to each individual who met these requirements were placed in the control group. They then collected the same information (wages, AGI, etc.) as available on each of the people in the control group for the years 1993 through 1997 (Bostic and Prohofsky, 183).

Of the 185 individuals in the study group only 171 filed tax returns in any of the years from 1993 through 1997; and only 150 were filed in 1995, which was the year the individuals were hired (Bostic and Prohofsky, 184). However, when analyzing the remaining individuals hired through the EZ program verses those who weren't, the authors found that the program had a positive effect on both wages and adjusted gross income. Evidence shows that the incomes of individuals increased faster for EZ program participants than the controls (Bostic and Prohofsky, 201). This affect appears to be greater for those who were less well-off prior to program entry. This makes sense because, for example, the EZ program provides a tax credit of 50% for minimum wage employees but only a 37.5% tax credit for employees with wages twice that level (Bostic and Prohofsky, 180). They also found that those who participated in the program were more likely to file a tax return. However, they observe that these beneficial wage and income effects only remained in the short-run. This makes sense since the tax credit is fazed out over a five year period of time (Bostic and Prohofsky, 201). Bostic and Prohofsky note that more research needs to be done is this area, but a concern is that this incentive may lead firms to turn-over their labor force quickly in order to gain more credit.

Carroll and Sachse (2005)

There has been much debate as to the proper use of TIF, specifically whether it should be applied to developing undeveloped property or as a way to redevelop blighted and environmentally degraded property, and whether it is best used for industrial development or mixed-use and residential development. Carroll and Sachse (2005) examine the applications of TIF districts in areas with residential properties. Specifically, they try to answer the question of whether residential properties within a TIF district have increased residential property values because of the tax program. So far, there has not been any literature to follow the effects of TIF on residential development (Carroll and Sachse, 405).

Carroll and Sachse note that there are two issues that should be concentrated on when scrutinizing the practice of TIF for residential development: one being the degree to which housing affects regional economic growth, and the other being how the role of government taxation and expenditure affects the value of residential property. The authors note that evidence provided by Reid (1958)[1] (Carroll and Sachse, 406) shows that residential real estate is linked to economic growth by being the main asset and equity creator for a large part of the population and that a study done be Berkovec and Fullerton (1992)[2] (Carroll and Sachse, 406) also link residential real estate to economic growth because of the relationship between real estate consumption and investment. These two affects, has led to a higher property value appreciation rate compared to commercial and

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[1] Reid, Margaret G. Capital Formation in Residential Real Estate. *The Journal of Political Economy* 66, 2 (1958):131-53

[2] Berkovec, James and Don Fullerton. A general Equilibrium Model of Housing, Taxes, and Portfolio Choice. *The Journal of Political Economy* 100, 2 (1992): 390-429

industrial properties. Therefore, it is believed that development strategies that target residential areas (like TIF Districts) are better able to promote economic development growth and increase property values than those strategies which concentrate on manufacturing and commercial development (Carroll and Sachse, 406).

In order to creditably analyze the affects of TIF, studies have to consider the role government plays in the mobility of residents. Carroll and Sachse note that according to the Charles Tiebout's model, residents are more likely to move if their property taxes increase when there is no simultaneous service improvements for the residents dwelling in the taxed area. Carroll and Sachse thus note that projects such as mixed-use and industrial TIF districts which don't improve public services would initiate the same type of household flight incentive. Therefore, if fairly mobile residents believe that targeted residential zones are less desirable, the TIF would not only be ineffective for raising property values, but actually might reduce them (Carroll and Sachse, 406).

For their study, using data from 1980 to 1999, Carroll and Sachse use time-series and cross-sectional analysis of residential TIF district property for the City of Milwaukee, Wisconsin. Tax increment financing has been used in Milwaukee for more than 30 years, in which time more than 50 districts have been formed. These districts have been used to promote either industrial, commercial, or residential development or redevelopment throughout the city-wide area. All data used in this study came from the City of Milwaukee Master Property File (MPROP). This is a public record of all property within the city from 1980-1999 (Carroll, 406). They analyzed the assessment value taken from MPROP of all dwellings (residential, condominiums, mercantile apartments) that were included in any TIF District between 1985 and 1995. The aim of this analysis was to

figure out whether TIF affected residential property valuation over time. Because Carroll and Sachse only wanted to focus on property valuation within a TIF district, their analysis only included dwelling units that were zoned in a TIF district during any time between 1985 and 1995. This gave them a total of 2,640 observations (Carroll and Sachse, 407).

To see the effect of TIF on residential property valuation, Carroll and Sachse used a hedonic price model, which is a typical way house pricing is determined. The elements of this model usually include dwelling characteristics, accessibility to occupation, and the surrounding neighborhood features. In their empirical model, they use the variables included in the hedonic model plus TIF characteristics and control variables. Here the dependant variable is the property value for each year from 1980 to 1999 measured in 1980 dollars in logs to account for diminishing marginal utility of property attributes. Their model also corrected for first order autoregression (Carroll and Sachse, 407). A closer description of the variables used in their model can be found in Carroll and Sachse Table 1 on page 408.

An important observation for the authors to note was that 89 percent of the TIF districts that were a part of the analysis belonged to the residential or mixed-use development categories not the industrial development category. Results show that dwellings that were located within a TIF district decrease residential property value by 16.75%, all other thing equal. However, when just looking at residential dwelling that were located in a TIF district that was designated for residential or mixed-use development verses industrial development, the analysis shows that residential property value increased by 37.79%, all other things equal. Hence, the findings suggest that

residential property located in a redevelopment district will increase tax dues, making the property less attractive and thus lowering property values unless the improvement provided by the redevelopment directly benefits the residence, in which case it will cause property to become more desirable (Carroll, 409).

The authors note that the results show that the success of TIF for residential redevelopment depends on what parameters the TIF is applied to the district. Tax Increment Financing districts do not result in increased residential property values unless it is constructed with the intent of mixed-use or residential development (Carroll and Sachse, 410).

Gladstone and Preau (2008)

Gladstone and Preau (2008) analyse the growth of the tourism industry in New Orleans, specifically pertaining to its geographical aspect. The authors' purpose is to discern the connections between tourism and the process of gentrification. Here the term gentrification is defined as a process where middle and upper-class residents displace working-class residents in central city areas. Gladstone and Preau then apply their new findings to the theories of urban revitalization and tourist development. The paper concludes with looking at specific cases in New Orleans of redevelopment, the "tourist bubble", historic preservation, and changes in the district Tremé because of tourism. When studying both the residential and commercial gentrification process in New Orleans, the authors discover that gentrification is more specific than the census tract can reveal. It occurs at a block-by-block level or even smaller, and the full affects of the

process cannot be analyzed without accounting for the surrounding geographical area as well.

Gladstone and Preau note that New Orleans represented an excellent case study for this analysis. Ranked fourth in the United States in terms of tourist growth, New Orleans is one of the fastest growing tourist spots in the United States. According to Gladstone and Preau, in 2003, nearly two-thirds of all tourists to Louisiana spent at least one night in the city. Even the number of cruise ships entering or departing from New Orleans has expanded by more than nine times from 1993 to 2003. In fact, tourism is such major aspect of New Orleans' economy that (depending on how one measures it) tourism is the largest or second largest industry in the city (Gladstone and Preau, 139).

The effects of such a large economic force bring with it some obvious changes. Tourism related jobs have increased dramatically since the 1970s. The number of jobs in New Orleans from 1977 to 1997 has decreased 0.4% while the number of tourism related jobs has increased by 60% (Gladstone and Preau, 140). Government assistance to tourism has been both a cause and result of the growth of this industry. Both the city and the state of Louisiana have been actively promoting restoration and maintaining the French Quarter of New Orleans. Mayors have deliberately improved infrastructure to encourage tourism in this district. These improvements shape and reshape the city and as a result, often change the socioeconomic makeup of the neighborhoods. In the 80s and 90s, there was an influx of white residents to neighborhoods bordering French District and Central Business Districts. When investment began to flow back into these districts as a way to develop its tourist sector, one could easily see that there was also concurrent

residential displacement at this time "particularly… of poor black renters by more affluent white homeowners" (Gladstone and Preau, 141).

In order to draw a solid conclusion about the links between tourism and gentrification, the authors first investigate and specify what attributes make certain neighborhoods more desirable to gentrifiers. Their study group consisted of eight neighborhoods: French Quarter, Faubourg Marigny, Tremé, Bywater, Algiers Point, the CBD, the Lower Garden District, and a portion of Central City, which were chosen because they were within or near major tourist zones in New Orleans (Gladstone and Preau, 145). Doing a block level analysis of these neighborhoods and using data from the U.S. bureau of the Census from 1977 to 2002, the indicators Gladstone and Preau analyze are race, owner-occupancy of residential buildings, and housing value. They assume that gentrifiers are mostly white, have smaller families, and are more likely to own the buildings they occupy, and that their efforts at "decolonizing" the inner city usually pay off in the form of higher housing values (Gladstone and Preau, 147).

They found that between 1970-2000, although New Orleans lost 18.3% of its overall population, and its white population shrank by 58%, its black population grew by 20%. Most of neighborhoods within or near major tourist zones account for a disproportional share of this population decline. However, over the last 20 years, block level analysis show that neighborhoods within or near major tourist zones have become whiter and more affluent, particularly since 1990. Data of these neighborhoods also show that 80.9% of the black population decreased from 1990 to 2000, and that the owner-occupancy rate of these areas rose faster than the city's average rate. The authors believe that all of these trends lend evidence to support the claim of gentrification

(Gladstone and Preau, 147). Additional data reveal that the median housing values for the study area rose by 43% in real terms from 1990-2000, while city-wide median housing values in 2000 are found to be lower than that of 1980 in terms of 2000 dollars. Further evidence shows that in 2000, almost a quarter of those workers living in neighborhoods within walking distance to tourist zones are employed in arts, recreation, accommodation and food service industries (Gladstone and Preau, 154).

Gladstone and Preau note that, while individuals no doubt play a role in the downtown redevelopment process, most redevelopment and gentrification occurs when city officials and investors see a neighborhood as less valuable than potential alternatives. As such, almost all redevelopment seen in New Orleans is related to tourism and promoted by the local government itself (Gladstone and Preau, 156).

The authors use this explanation to exemplify the process:

> "Since the 1960s, residential and commercial investment in the French Quarter has spread into surrounding areas along with the effects of redevelopment. As both tourism and property values increased in the French Quarter during the 1960s and 1970s, poorer residents began moving out, many to adjoining neighborhoods. Middle-class whites and gay men who worked in the tourism industry moved downriver into the working-class neighborhood of Marigny, a trend that has accelerated since Katrina… Others moved even farther downriver into Bywater neighborhood, sparking reinvestment and leading to substantial demographic change. Meanwhile, quite a few of the French Quarter's remaining black residents moved north into low-income and historically black Tremé." (Gladstone and Preau, 148)

Their findings show that cities often compete for tourist dollars by making their downtowns more attractive. This is mainly done by redeveloping and revitalizing downtowns into kinds of places people want to visit. Downtown areas are typically decaying or underutilized so many businesses, officials, and residents see redevelopment highly desirable for this purpose. But this can change the make up of the residents who

live there. Gladstone and Pruea conclude that because tourism leads to redevelopment, it is a main contributor to gentrification. This is because it increases rents, which low-income households can't afford, and as the redevelopment area is more attractive to tourists, it also raises land values even more because demand has increased which in turn leads to greater gentrification (Gladstone and Preau, 166).

Robinson (1989)

There has been much focus on local economic development in recent years, yet no policies aimed at reducing urban poverty, especially for minorities, has been very effective. However, it seems that the links between economic development and combating poverty are becoming closer all the time. Long[3] (1987) notes that

> "Getting the poverty and near-poverty population that subsists outside the mainstream economy usefully employed is a major task of urban economic development." (Robinson, 284)

In the article, Robinson (1989) analyzes ways in which large municipalities devise and carry out economic development strategies. Specifically, she looks into what efforts these administrations undertake to equitably distribute the benefits of economic development programs to black, Hispanic, low income, and other economically underprivileged individuals (Robinson, 284).

Robinson begins by exploring and comparing the two common tactics for economic development: the corporate-center approach which focuses more on the demand side, and the alternative approach which uses more of the supply side techniques. But in order to do this, Robinson identifies three dimensions in which economic

[3] Long, Norton E. 1987. Labor Intensive and Capital Intensive Urban Economic Development. *Economic Development Quarterly* 1, 3: 196-202.

development policies are conceptualized (Robinson, 284). First, by looking at the roles public and private sectors, she is able to better understand what part these two groups play in the economic development of the city. Second, she examines public sector planning so that she can more fully comprehend the development goals and the transparency of the public sector. The third dimension is public sector interventions in which Robinson looks into the way and the circumstances the public sector uses economic development programs. Specifically it looks at whether and how public sector resources are used in aiding private economic development (Robinson, 284).

Robinson then analyzes these two methods used by the administrations. The more popular method is the corporate-center approach. The corporate-center method focuses on promoting economic growth and real estate development in business districts. It believes it can aid the entire economy eventually through the trickle down effect. It tries to make opportunities for investment which will in turn lead to job creation and also lead to a larger tax base. Its driving mechanism is the private sector so it focuses on improving opportunities for private capital investment. Here, the public sector's duties are to ensure that there is a economic and social climate that encourages and does not interfere with private investment (Robinson, 285). Corporate-center strategy typically only involves businesses and government and so participation of lower income and minority groups are excluded. Public resources, in these economic development programs, are many times provided as a way to provide incentives to the private investors by filling resource gaps or making the area more attractive to outside investors.

The equitable shortcomings of the corporate-center approach has led to the alternative approach. Under this strategy, the public sector takes a strong lead in

economic development. This means the government acts in ways to provide incentives as a way to guide private investments in order to create more specific distributional benefits (Robinson, 286). The idea of this method is that decentralizing public economic development programs and focusing its economic development strategies more directly at underprivileged residents will ensure that they receive benefits and improve their economic status. This approach also tends to lead to real estate development, but it focuses more on development human resources (Robinson, 285).

Robinson then studies to what extent these two methods are used by the administrations of specific cities. In 1986, Robinson surveyed public sector economic development officials of all cities in 1980 with a population above 100,000 of which there were 175 U.S. cities that fit this category. Of these, only 141 gave information that could be used in the data set. The survey asked a series of questions that inquired upon the ways the public sector was involved in economic development and how other bodies were involved in this process (Robinson, 287). Using the responses, Robinson categorizes whether these cities follow corporate-center or alternative policy approaches under the three previously mentioned dimensions. Responses show that 22.3% of cities said that the public sector had a "supportive role" in providing development incentives (a corporate-center type response) while only 12.2% said that the public sector had a "guiding role" (an alternative approach response). This left 65.5% of the surveyed cities saying that their city sometimes uses both methods. When asked the relative importance of growth stimulation and economic opportunity improvement, 37.4% said growth stimulation was more important than improving opportunities. Just 4.3% said that economic opportunities was of greater importance than growth but a large 68.3%

indicated that these two goals were of equal importance. Thus the information suggests that most cities use a mixture of the two economic development methods (Robinson, 288). Considering the political and economic climate that cities have, this makes sense because although distributing economic benefits to all is popular, cities also have to design policies to attract investment in order to increase tax revenue.

Robinson attempts to also find the relationship of either alternative or corporate-centered policies by examining their consistency across the three dimensions of economic development. Through Robinson's survey, results show that economic development in many U.S. cities follows the corporate-center strategy in which administrations promote economic growth. However, Robinson finds that most cities use a hybrid approach or a "corporate-distributive" method. In this approach, cities promote growth and also try to focus some of their attention on specific economically underprivileged groups (Robinson, 290). Often the municipality's efforts to promote economic growth hinges on local private resources. This puts individuals with lots of economic resources hold more of a dominant role in economic development and hence, individuals with little economic resources play a very minor part of the development strategy. However, the prevalence of urban poverty problems today hint that cities undertake may have to begin to more actively direct their benefits to low-income and minority groups if they fully want to have successful economic development strategies.

Rosenthal (2008)

Rosenthal (2008) examines the extent to which neighborhoods cycle through episodes of decline and renewal. Typically, in most low-income urban residential areas

in America, poorer families live in old homes that were originally inhabited by much higher income households. This generates a number of questions Rosenthal seeks to answer which include: Is the change of economic status of neighborhoods common? Do neighborhoods undergo a process of traveling up and down in economic status? Can these cyclical changes be anticipated? What factors will contribute to these changes? In addressing the first question, Rosenthal uses U.S. census tract data from 1950 to 2000. Specifically, Rosenthal looks at transition rates of different levels of economic status for 35 MSAs. Economic status of a neighborhood is determined by finding the average income of a neighborhood relative to the average incomes of all other census tracts in a given city in the year of observation. A specific neighborhood is then placed into one of four quintiles, either low, lower-middle, upper-middle, or high income categories, based on its relative income level (Rosenthal, 817).

Rosenthal creates three panels for the analysis of this paper. Each panel follows neighborhoods over time within a given set of geographical boundaries (Rosenthal, 834). The first panel uses ten year census tract data from 1950 to 2000 for 35 metropolitan sites in the U.S. in 1950. The problem with this is that some of the census tracts were revamped since 1950, and some of those tracts belonged to a larger group of MSAs by the year 2000; therefore when constructing the balanced panel of census tracts from 1950 to 2000, only tracts that remained in the same MSAs in 1950 and 2000 were kept. The reason some examinations look at 35 cities while others only look at 34 was because data was not procured from Portland Oregon in 1960.

Rosenthal also used a census tract panel created by the firm Geolytics Inc. This particular panel can follow all identified census tracts on a consistent geographic basis in

the U.S. from 1970 to 2000. However, census tract information gathering greatly expanded over this time to include the entire nation for the first time in 1990. Rosenthal also used a specific panel just for Philadelphia. This panel follows all of the voting wards in Philadelphia County on a consistent geographic basis over time from 1900 to 2000. Data from each decade is acquired from many sources. The different sources for the data can be found in Table A.1 (Rosenthal, 835). The more difficult task is to form individual neighborhood's consistent geographies over time because census tracts may change over each decade. Table A.1 also shows correspondence tables from census data pamphlets that indicate the set of tracts from one decade to the next. These tables only show whether the tracts overlap over the years, but not the degree to which they overlap.

However, Geolyticts constructed census tract data for 1970, 1980, 1990, and 2000 in terms of the 2000 geographic tract boundary. They did this by using block-level boundary files available from Census for the last few decades. This allowed Rosenthal to create two sets of data: tract data for 1970 through 2000 in terms of 2000 census tract boundaries, and tract data for years 1950 and 1960 in terms of 1970 census tract boundaries. The next step was to then convert the 1970 boundaries to the 2000 boundaries so that the panel set can have a consistent set of geographical tracts. Geolytics provided an electronic map of the census tract areas so it was possible using mapping software to compute weights that convert 1970 tract boundaries into the 2000 tracts. The balanced data panel for Philadelphia County of neighborhood attributes is made for certain decades from 1900 to 2000. In this panel, neighborhoods are converted to 1900 Ward-level geographic boundaries. Rosenthal used MapInfo to convert the old boundaries to their corresponding current areas.

Rosenthal begins by using a time-series, one period lag model with a constant:

$$\log(y_{i,t}) = \theta_{i,o} + \theta_{i,1}\log(y_{i,t-1}) + e_{i,t}$$

where i and t represent the individual census tract and time period. However, in order for $\log(y_{i,t})$ to be stationary, $\theta_{i,1}$ must be less than 1. But null testing of $\theta_1 = 1$ shows that OLS estimates are bias. Therefore Rosenthal uses a Dickey-Fuller test by subtracts $\log(y_{i,t-1})$ from both sides which yields:

$$\Delta\log(y_{i,t}) = \theta_{i,o} + \theta_{i,1}\log(y_{i,t-1}) + e_{i,t}$$

where $\Delta\log(y_{i,t}) = \log(y_{i,t}) - \log(y_{i,t-1})$ and $\theta_{i,1} = \theta_{i,1} - 1$; so that now the null stationarity hypothesis can be tested as $\theta_{i,1} \neq 0$ (Rosenthal, 821). Rosenthal also chose to control for externalities that may affect the social economic status of the neighborhood. Rosenthal expands this model to include controls for the house age (*HouseAge*), social economic status variables (*SES*), and a distance variable (*Distance*) which measures how many miles to the census tract with the highest population density in year 2000:

$$\log(y_{i,2000}/y_{i,1990}) = \theta_{MSA} + b_1 HouseAge_{i,2000-k} + b_2 SES_{i,2000-k} + b_3 Distance_i + \theta_1$$
$$\log(y_{i,2000-k}) + \log(y_{i,2000-k}/y_{i,2000-k-10}) + e_{i,2000}$$

Here k represents the number of decades that the time covariates are lagged and θ_{MSA} controls for MSA (Rosenthal, 827).

The variable *HouseAge* simply measures age of the house. The idea of using the age of the house as a factor reflects the belief that older houses are usually inhabited by lower income families while newer houses are typically inhabited by higher income families. Social economic status variables (*SES*) include the type of housing unit the family is residing in, the density of housing units in the neighborhood, the education level of the heads of household, the age of the residents, the marital status of the residents and

the race of the residents. Rosenthal chose to include these variables in the model because a few theories suggest some of these factors create externalities that affect the migration of households and affect the economic status of neighborhoods. The types of families that are likely to help attract higher income households include the presence of prime aged workers, the presence of individuals who have higher education, and the presence of individuals who own their house. Prime aged workers usually bring financial resources to the neighborhood; higher educated neighborhoods typically commit fewer crimes and are more likely to be employed; and homeowners usually hold closer ties to their community and so have a deeper vested interest in their neighborhood. On the negative side, denser populated areas tend to exhibit higher crime rates; higher crime in turn lowers property values and attracts lower income families. Rosenthal also notes that households may choose to enter or exit a neighborhood based on the social status of the community. An example of this is affected by the racial composition of the neighborhood. Because minorities tend to be of lower income status and higher income families tend to distance themselves from lower income families, Rosenthal included a race variable for African American and Hispanic households. Rosenthal also included a variable that measures the percentage of public housing units in a neighborhood because place-based subsidized rental housing also attracts lower-income individuals to neighborhoods (Rosenthal, 825-826).

The evidence indicates that neighborhood economic change is common over long periods of time. Rosenthal finds that almost two-thirds of the low-income neighborhoods in 1950 are of a higher income bracket in 2000 (Rosenthal, 833). From their study sample they've found that in each decade, the average change in urban neighborhood

relative income status is about 12 to 13 percent (Rosenthal, 818). His findings also support the conclusion that neighborhoods cycle up and down in economic status of long periods of time. The Philadelphia panel indicates that a full neighborhood cycle lasts about 100 years. Results show that the neighborhood socioeconomic composition also contribute to the economic status of neighborhoods (Rosenthal, 834). The density of housing units per square mile, the homeownership rate, the percentage of heads of households with a college degree, the presence of prime aged individuals (ages 30 to 55), and the percentage of minorities are all found to influence the change of neighborhood economic status. These results can be seen in Table 8 (Rosenthal, 831).

Tsoodle and Turner (2008)

Property taxes are one of the largest sources of local government revenue in the U.S. Because of its importance, Tsoodle and Turner (2008) explore how these property tax affects are capitalized into the rental value of residential units. Tsoodle and Turner cite and examine numerous studies that provide evidence showing property taxes and public services affect property values. However, it is possible that property taxation may in fact increase housing rents. Tsoodle and Turner explain that increasing property taxes will reduce people's willingness to pay for the property in the short term and, because the stock of available houses is fixed in the short run, will cause the capitalization of the tax to be fully reflected in housing prices. The decrease in housing prices will cause some of the housing suppliers to incur losses and leave the market. Suppliers will continue to leave the market until normal profits are again attained in the market. Assuming that the housing industry has constant costs, the market clearing price of buying houses will

bounce back to its original level in the long run because the supply is perfectly elastic. Therefore, with a constant cost industry, there is no capitalization of property tax policy on purchasing houses in the long run. But, because the tax decreased the housing stock, the value of rents will increase in the long run because the limited number of units available to tenants.

Tsoodle and Turner use data collected by the American Housing Survey (AHS), the National League of Cities (NLC 2005), and from the cities themselves. Specifically the AHS collects information at the unit-level, the NCL reports city-level information collected from 2001 and 2003, and the authors gathered data from the cities reports for 1999. The AHS contains both a national and metropolitan survey that examines cross-sectional and time-series analysis. These surveys also include any new houses created over the time period, thus being able to be a dynamic and accurate sample of the U.S. housing supply. Using the AHS national surveys, Tsoodle and Turner gather data in the years 1999, 2001, and 2003 form Midwestern cities that have more than 100 rental units surveyed a year in the AHS and that do not have land characteristics that significantly limit urban growth. They also include data from Denver and Oklahoma City to increase their sample size. Their sample is made up of single-detached and multiplex rental units but do not include condominiums or mobile homes because other service fees may be internalized in their rent values. They also exclude rental units that rent for less than $600 a year (2003 inflation adjusted) or that are larger than 10,000 square feet. Their sample is composed of 7,902 rental units from 14 cities over three survey years.

In their analysis, Tsoodle and Turner choose to find the effective property tax rate on rental units in order to adequately appraise the impact of property taxes on those units.

Because the AHS only collects information about from owner-occupied properties and not rented properties, they have to create their own effective property tax rate measure. By using property tax data for owner-occupied units from the AHS, they calculate each homeowner's effective tax rate by dividing the total real estate taxes of the unit by the unit's value. They then find the city's average effective tax rate from all of the individual's effective tax rates. Houses that are valued at less than $10,000 or pay less than $500 on property taxes per year are removed from this sample which leaves 18,000 owner-occupiers in 14 cities at three points in time left in the sample. Tsoodle and Turner also consider the possibility that by some states providing tax relief to homeowners and not landlords might act as a way to skew their effective tax rate measure. They conclude that this is not a problem because the relief is given in the form of rebates or income tax credit and the AHS data shown of property taxes owed in the AHS is recorded at the pre-relief level. Tsoodle and Turner also concede that using owner-occupied effective tax rates as an equivalent for rental effective tax rates may pose problems if the quality of rental dwellings differs from the owner-occupied dwellings. They found that the dwelling ages, and their rated adequacy were virtually identical for the two groups. However, the type of housing (single-family detached units verses multiplex units) between the two groups did differ. They still decide to use the owner-occupied effective tax rate as an estimate for rental units' effective tax rate because there is no data that shows both rents and rental-unit-specific property taxes.

In Tsoodle's and Turner's econometric approach, they use a two-stage hedonic rent model in order to segregate unit-level and city-level affects. In its first stage, the model uses the unit-level data to find an estimate of a city's average rent at one point in

time after controlling for unit and neighborhood features. They use city/time binary variables to account for different cities' characteristics over time as well as considering that markets for rental units may also differ between cities and time. Drawing upon city-level data for the second stage of the model, they regress the average rents from stage one on the city-level variables (Tsoodle, 69). The results from Tsoodle's and Turner's findings show that increasing the property tax rate by one standard deviation increases housing rents by $402 to $450 a year, thus showing a significant positive correlation between property tax rates and housing rental values.

CHAPTER 3 - Data

I use three data sources for this analysis: city level data which I gathered from individual cities whom indicated when, what kind, and where redevelopment occurred in their city; the U.S. Census Bureau's American FactFinder 2000 data set of detailed tables, found on their website, to identify which block-groups and census tracts are redeveloped as well as which are within the cities I am studying and use Metropolitan Statistical Areas codes provided by the U.S. Census Bureau to code each observation's state and county FIPS code, and the 2000 Summary File 3 Census data for household and population data. Table 1 summarizes the data sources.

To begin my study, I first had to find a sample of cities that would be homogeneous in as many characteristics as possible. I chose to only use cities in the Midwest because there are no geographical boundaries limiting their growth; that had a population of over 150,000 in 1990 to ensure that the study has adequate tract observations for my sample, and which were old cities with traditional central business district areas because they likely face similar urban business deterioration situations. The cities of Des Moines, Iowa; Wichita, Kansas; Kansas City and St. Louis, Missouri; Lincoln and Omaha, Nebraska, and Milwaukee, Wisconsin, were the cities that fit this description and were helpful enough to provide me with the necessary information to complete the study. I asked each city to provide as specific information as possible, on the geographic location of any municipal assisted, mixed or commercial redevelopment projects the city has been involved in between the years 1990 and 2000.

The cities provided a map, reports, or specific addresses of the redevelopment projects (see appendix A for sources). Using thematic maps from the American FactFinder U.S. Census Bureau's 2000 census, I found the block-groups and census tracts that these projects were located in. These thematic maps contain the geographical boundaries of block groups, census tracts, and counties for all cities in the U.S. for the 2000 decennial census. I can also use these maps to identify every census tract and block group that was a part of the study cities. I then code data of block group and census tract observations of all the cities in the sample identified first by the state FIPS code, then county FIPS code, then census tract number, then block group number (see Appendix B for FIPS code source). I then create an indicator variable for each observation that takes on the value of 1 if the block group or census tract had redevelopment between the years 1990 through 2000, and 0 otherwise.

Exogenous events are also taken into account such as the flood of the Raccoon and Des Moines Rivers in city of Des Moines in 1993. In trying to find a source of information that allowed me to determine which block groups were affected by the 1993 flood, I eventually got in contact with Pamela Cooksey, the Deputy City Engineer. She sent me a CD that included a map of the city of Des Moines at the high flood stage in 1993 (see Appendix A). From this I was able to identify which block-groups were flooded in 1993 by cross referencing the flood map with the American FactFinder U.S. Census Bureau's 2000 thematic maps. To allow for the possibility that the flood generated rebuilding and redevelopment rather than the city's redevelopment efforts, I control for the flood impacts with an indicator variable for each observation that equals 1 if the block group is in Des Moines and was flooded, and 0 otherwise.

I focus on two household economic indicators I deem key to determining the welfare affects of residents in this study: value of houses, and the unemployment rate. Using the ICPSR's data set of the U.S. Census Bureau's Summary File 3 (see Appendix B), which provides very comprehensive population and housing data, I create two data sets that contains these two indicators, (the median value for owner-occupied housing units, and the unemployment rate for the civilian portion of the labor force for the population 16 years old and over) (see Appendix C for how I created these variables) at both the block group and census tract level in 2000. I include in this data set control variables (also taken from the U.S. Census Bureau's Summary File 3) which typically impact in some way, the economic indicators I am studying. Control variables include: education, underemployment, poverty rate, population age, racial make-up, the age of the house structure, the vacancy rate, the fraction of households living in the same home since 1995, and city fixed affects.

CHAPTER 4 - Econometric Approach

If a city undertakes redevelopment projects for the purpose of aiding businesses and revitalizing economic activity, I expect to see a positive correlation between redeveloped areas and residential economic indicators of those who dwell within redeveloped areas, when controlling for all other variables. Economic theory predicts that these subsidies act as a way to lower business' costs or create greater attraction for commerce, which should therefore lead to a business becoming more successful. Successful businesses grow and expand and therefore hire more labor which decreases the unemployment rate, and improvements create a more attractive region to reside in and therefore increase the property and rent values within the region.

This section describes the econometric approach I take to examine the impact of redevelopment on house values, and unemployment rates. I do cross sectional regressions for year 2000 at the block group and at the census tract level, using essentially the same model.

House Values

Based on the econometric theory and housing demand controls used in Turner (2003), I estimate the following OLS model at the block group level using Census 2000 Summary File 3 and city level data:

$$House\ Value = X'\beta + \gamma Redevelop + Z'\phi + M'\delta + \varepsilon \qquad (1)$$

where *House Value* is the median value of owner-occupied housing in the block group; X is a vector that controls for the demographic characteristics (income, race, age, education

and employment status) in the block group, which are found to be important determinants of housing demand in previous studies (Turner, 2003); *Redevelop* is an indicator variable that takes on a value of 1 if there was at least one redevelopment program in that block group between the years 1990 and 2000, and 0 otherwise; *Z* is a vector that includes controls for the structural age of the unit which are shown to be an important factor in house values (Rosenthal, 2008), and *M* is a vector of MSA fixed effects which is described by Boarnet (2001) to be an important factor. I can use a unique estimate for each city since the model has no constant.

Specific block group demographic variables include: the median household income; the fraction of households that are black; the unemployment rate; the fraction of the population 25 years and over who have had some level of college education or more; the fraction of the population that is of prime working age (age 18 to 64); and the fraction of the population that is of retirement age (age 65 and above). Specific house age characteristics include: an indicator variable that takes on the value of 1 if the block group's median year built of owner-occupied units is 1939 or earlier, and 0 otherwise; an indicator that takes on the value of 1 if block group's median year built of owner-occupied units was between 1940 and 1959, and 0 otherwise; an indicator that takes on the value of 1 if block group's median year built of owner-occupied units is between 1950 and 1979, and 0 otherwise, and an indicator that takes on the value of 1 if block group's median year built of owner-occupied units is between 1980 and 1999, and 0 otherwise. I used the median year built variable as an indicator to determine the typical age of the houses located in the block group since older homes tend to depreciate in value (Rosenthal 2008). I created 20 year time intervals because I believed these time intervals

to be as detailed as I could get to follow the change in house value over time without being too small as to get covered up by normal error variation in the model.

I estimate equation (1) in linear form, where both house value and income is measured in tens of thousands of dollars; a log-log form, where both house value and income are logged, and a linear-log form, where value is in tens of thousands of dollars and income is logged. To allow for the possibility that the Des Moines flood generated rebuilding and redevelopment rather than the city's redevelopment efforts, I also estimated equation these models controlling for an indicator variable that equals 1 if the block group is in Des Moines and was flooded, and 0 otherwise.

I also estimate equation (1) at the census tract level. The specification is identical to the block group model, except I am able to also control for the fraction of households living in the same house since 1995 at the census tract level.

Unemployment Rate

Numerous studies have examined metropolitan unemployment rates (for example, see Tarzwell, 1997 and Bartik, 1991). These studies inform my econometric specification. I estimate the following OLS model at the block group level using Census 2000 Summary File 3 and city level data:

$$Unemployment = Y'\beta + \gamma Redevelop + M'\delta + \varepsilon \qquad (2)$$

where *Unemployment* is the fraction of the civilian labor force 16 years of age and over who are unemployed; *Y* is a vector that controls for block group demographic characteristics (race, age, education and poverty status) which are likely to be correlated with unemployment rates (Bartik, 1991); *Redevelop* is an indicator variable that takes on

a value of 1 if there was at least one redevelopment program in that block group between the years 1990 and 2000; and *M* is a vector of MSA fixed effects (shown to be an important determinant in Boarnet, 2001). I can use a unique estimate for each city since the model has no constant.

In addition to equation (2), I report specifications that control for the Des Moines flood variable and a measure of underemployment. The underemployment variable indicates the fraction of the working population that works less than 35 hours a week for the whole year, or that works less than 40 weeks in a year. Two hypotheses can be made on the outcome of this estimator: (a) more underemployment will decrease the level of unemployment all else equal because if underemployment is high, it indicates that workers work part time in lower skilled jobs than no job at all, or (b) the underemployment variable will be a proxy for lower skilled workers since lower skilled workers tend to make up the major proportion of the part time job sector; in which case, underemployment will increase the level of unemployment all else equal because low-skilled workers tend to suffer from higher unemployment in general.

I also estimate equation (2) at the census tract level. The census tract models are identical to the block group models, except I can also control for the fraction of the population in each census tract that has remained in the house housing unit since 1995. I call this a same resident variable and I include it in the census tract models.

CHAPTER 5 - Empirical Results

Table 2 reports the frequency distribution of the number of block groups and census tracts in each of the study cities in 2000. There is a large variation in the observation size from each city; with the most block group observations coming from Milwaukee (23%) and the smallest number of block group observations coming from Lincoln (6%). Likewise, there is a large variation in the census tract observation size, again with the most block group observations coming from Milwaukee (26%) and the smallest block group observations coming from Lincoln (6%), reflecting the differences in city population. Most of the redeveloped block groups (35%) in my sample come from Omaha, while only 2% of the redeveloped block groups are located in the city of Des Moines. However, when looking at the tract level, the largest portion of redeveloped census tracts in my sample come from Kansas City (33%), while again the smallest proportion of redeveloped census tracts come from Des Moines (1%).

Table 3 reports the sample means of observations for the full sample and by redevelopment status for block groups. Notice that block groups which have redevelopment projects have many indicators which show they are economically *worse off* than block groups that are not redeveloped. Redeveloped block groups have on average higher unemployment, poverty, and underemployment rates and lower household income and education levels than block groups that do not have redevelopment projects. In addition, redeveloped block groups on average have lower white populations, higher black populations, lower youth and retirement aged populations and a higher working age population. The average travel time to work for laborers in redeveloped block groups is

shorter than their non-redeveloped counterparts, meaning they probably live in closer proximity to their places of work. Interestingly, on average house values are higher in redeveloped areas than in non-redeveloped area, and rents are lower.

Table 4 reports the sample means of observations for the full sample and by redevelopment status, this time at the census tract level. Again, notice that tracts which have redevelopment projects have many indicators which show they are economically worse off than non-redeveloped tracts. Redeveloped tracts have on average higher unemployment, poverty (except for childhood poverty), and underemployment rates and lower income and education levels than block groups that do not have redevelopment projects. In addition, the median age of structures in the redeveloped tracts are older than non-redeveloped areas, on average less of the citizens in redeveloped tracts have resided within their dwelling since 1995 (indicating high turnover rate), and more of the houses in redeveloped tracts are vacant than tracts that are not redeveloped. The average travel time to work for laborers in redeveloped tracts is shorter than their non-redeveloped counterparts, meaning they probably live in closer proximity to their places of work. Redeveloped tracts on average have lower white and black populations, lower youth and retirement aged populations, and a higher working age population.

Table 5 reports the house value results for the block group estimations. Model (1) is the linear model and regresses house value on income, both expressed in terms of tens of thousands of dollars; model (2) regresses the log of house value on income logged. The semi-log model, model (3), regresses house value in levels (tens of thousands of dollars) on the log of income. Models (4), (5), and (6) repeat these specifications while controlling for the block groups that experience flooding in Des Moines in 1993. Notice

that the coefficient of the key variable of interest, redevelopment, is positive and statistically significant across models. Since the dependent variable of model (2) is logged and the dependent variable of models (1) and (3) is linear, the adjusted R-square cannot be used to determine which model explains the most. I use a Box-Cox[4] specification test (Griffiths et al. 1993) to determine which model fits best. According to this test, the log-log model gives the best overall fit[5]. Notice also that the flood interaction variable is not statistically significant and the magnitudes of the corresponding coefficients and significance levels between equations (2) and (5) are virtually identical. Thus, I use and refer to model (2) in all my subsequent analysis. According to that model, the redevelopment coefficient is 0.065. To interpret the results of the log model, multiply the redevelopment (an indicator variable) coefficient estimate by the full sample mean of the median value of owner-occupied housing unit variable ($92,082 x 0.065) which shows that redevelopment increases house value in a block group by $5,985[6] on average, all else equal. I expect to see the log of income and the

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[4] Box-Cox tests to see if two models with differing dependant variables (linear and log forms) are empirically equivalent. If $SSE_{(1)}$ is the sum of squared errors from the linear model, $SSE_{(2)}$ is the sum of squared errors of the log-log model, T is the number of observations, and $\bar{y}_G$ is the sample mean of the dependent variable, then the null hypothesis is given by:

$$l = T/2 \left| \ln[(SSE_{(1)} / \bar{y}_G{}^2)/ SSE_{(2)}] \right| \sim \chi_{(1)}{}^2$$

I reject the null if l exceeds the critical value at 5% significance level (3.84) which means the adjusted R-square values from the differing models cannot be used to find the best fit. My results imply to reject the null; then the linear model is the best fit if $SSE_{(1)} / \bar{y}_G{}^{\wedge 2}$ is smaller and the log model is preferred if $SSE_{(2)}$ is smaller.

[5] $SSE_{(1)} / \bar{y}_G{}^{\wedge 2} = (47{,}259.9287/9.2082^{\wedge 2}) = 557.37 > SSE_{(2)} = 238.12$

therefore I determine the log-log model to be the best fit.

[6] The semi-log model gives a result of $10,800 and the linear model gives a result of $12,400

percent of individuals with at least some college education to have a positive effect on the value of housing, which is what is seen in Table 4.

Since house value and income are both logged, its coefficient represents an income elasticity of housing demand. These results show, for instance, that a 10% increase in income will increase the value of a house in a block group by 2.9% on average, all else equal. Taking a look at education, suppose the college education rate is increased by five percentage points from its sample mean (i.e. 49.8% to 54.8%), which is approximately a 10% increase in the fraction of people with some college education (dividing the percentage point change 0.05 by average fraction of the population that has college education 0.498). Such a change causes the median house value in a block group to increase by $6,676[7] on average, all else equal. However, the unemployment rate does not seem to have any effect on house value. Previous research, such as Turner (2003), finds that black households often reside in lower valued houses so a higher fraction of black households in a block group may have a lowering effect on house values. Taking a look at the coefficient, suppose the fraction of black residents increased by 2.7 percentage points from its sample mean (i.e. 27.2% to 29.9%), which is approximately a 10% increase in the fraction of the black population. Such an increase the black population is associated with a $547[8] decrease in house value, all else equal. The age categories show some peculiar results. Since children under the age of 18 are the excluded category, results suggest that working age households do not have a statistically significant effect on the value of the house compared to households with youths. However, older

[7] The impact on house value of a 5 percentage point increase on college education rate in a block group is computed as 1.45*$92,082*0.05 = $6,676

[8] The impact on house value of a 10% increase in the proportion of the population that is black in a block group is computed as -0.22*$92,082*0.027 = -$547

households do have a positive effect on the value of houses when compared to young families, which is as expected (Turner, 2003) . Suppose the fraction of senior residents increased by 1.2 percentage points (i.e. 12.2% to 13.4%), which is approximately a 10% increase in the fraction of senior citizens, this causes the median house value in a block group to increase by $541[9] on average, all else equal. In looking at how the age of the building structure affects the value of the house, the 1960-1979 built and 1980-1999 built variables are both statistically significant and positive, when compared to units built in 1939 or earlier. Suppose the fraction of 1960-1979 houses increased by 10% or 2.3 percentage points. Such an increase causes the house value in a block group to increase by $254[10], all else equal; a similar change in the percent of 1980-1999 houses increases home value by $175[11], all else equal. This supports Rosenthal's findings that the younger the structure, the greater its value. The 1940-1959 built variable however is not statistically significant. Finally, the city fixed affects have a statistically significant impact on the value of houses.

Table 6 reports the house value results for census tract models. Models (1), (2), and (3) correspond to the same numbered models in Table 4. Model (4) and (5) report the log and semi-log models, respectively, controlling for vacancy rate. Finally, models (6) and (7) add in the flood control variable. Again, notice that the coefficient of the key variable of interest, redevelopment, is positive and statistically significant across models except the semi-log models. The Box-Cox test reveals that the base log model gives the

[9] The impact on house value of a 10% increase in the proportion of senior citizens in a block group is computed as 0.49*$92,082*0.012 = $541

[10] The impact on house value of a 10% increase in the proportion of houses built from 1960-1979 in a block group is computed as 0.12*$92,082*0.023 = $254

[11] The impact on house value of a 10% increase in the proportion of houses built from 1980-1999 in a block group is computed as 0.19*$92,082*0.01 = $175

best overall fit[12]. Referring to model (2), the redevelopment coefficient is 0.06. To interpret the results of the log model, multiply the redevelopment (an indicator variable) coefficient estimate by the mean of the value of owner-occupied housing units variable ($94,798x 0.06) which shows that municipal assisted redevelopment increases the house values by $5,688 on average, all else equal. Notice that this estimate is very similar to the $5,985 estimate for the block groups in Table 4. I expect to see income and college education to have a positive effect on the housing value which is what is seen in Table 5.

Since house value and income are both logged, its coefficient represents an income elasticity of housing demand. These results show, for instance, that a 10% increase in income will increase the value of a house in a census tract by 1.4% on average, all else equal. Taking a look at education, suppose the college education rate is increased by 5 percentage points from its sample mean (i.e. 50.4% to 55.4%), which is approximately a 10% increase in the fraction of people with some college education. Such a change correlates to the median house value in a block group to increase by $9,006[13] on average, all else equal. However, the unemployment rate did not seem to have any effect on house value. Taking a look at the coefficient related to the fraction of black households, suppose it increased by 2.8 percentage points from its sample mean (i.e. 27.8% to 30.6%), which is approximately a 10% increase in the fraction of the black population. Such an increase is associated with a $690[14] decrease in house value, all else equal. Since children under the age of 18 is the excluded category, evidence shows that

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[12] $SSE_{(1)} / \bar{y}_G{}^{\wedge 2} = (20{,}042.0866/9.4798^{\wedge 2}) = 223.02 > SSE_{(2)} = 69.72$

[13] The impact on house value of a 5 percentage point increase on college education rate in a census tract is computed as 1.9*$94,798*0.05 = $9,006

[14] The impact on house value of a 10% increase in the proportion of the population that is black in a census tract is computed as -0.26*$94,798*0.028 = -$690

working age households do not have a statistically significant effect on the value of the house compared to households with youths. However, older populations do have a positive effect on the value of houses when compared to young families, which is as expected. Suppose the fraction of senior residents increased by 1.2 percentage points (i.e. 11.7% to 12.9%), which is approximately a 10% increase in the fraction of senior citizens, this causes the median house value in a census tract to increase by $284[15] on average, all else equal. In looking at how the age of the building affects the value of the house, the 1960-1979 built and 1980-1999 built variables are both statistically significant and positive, when compared to units built in 1939 or earlier. Suppose the fraction of 1960-1979 houses increased by 10% or 2.6 percentage points. Such an increase causes the house value in a census tract to increase by $345[16], all else equal; a similar change in the percent of 1980-1999 houses increases home value by $198[17], all else equal. This supports the theory that the younger the structure, the greater its value. The 1940-1959 built variable however is not statistically significant. Finally, the city fixed effects have a statistically significant impact on the value of houses.

Table 7 reports the unemployment results for the block group models. Model (1) uses education, race, poverty rates, age, and city fixed effects as control factors. Model (2) is the base model controlling for the Des Moines flood, and finally model (3) reports the base model controlling for the Des Moines flood and underemployment. Notice that the coefficient of the key variable of interest, redevelopment, is *not* statistically

[15] The impact on house value of a 10% increase in the proportion of senior citizens in a census tract is computed as 0.25*$94,798*0.012 = $284

[16] The impact on house value of a 10% increase in the proportion of houses built from 1960-1979 in a census tract is computed as 0.14*$94,798*0.026 = $345

[17] The impact on house value of a 10% increase in the proportion of houses built from 1980-1999 in a census tract is computed as 0.19*$94,798*0.011 = $198

significant in any model. Notice also that model (3) gives the best fit according to the adjusted R-square value; I therefore use and refer to model (3) in all my subsequent analysis.

In this model, all coefficients are statistically significant except redevelopment and the city fixed effects variables. The fraction of the population with high school and college education, both have a negative impact on the unemployment rate as expected. Also, as prior studies suggest, the fraction of individuals who are below the poverty line, and the fraction of black households both have a positive impact on the unemployment rate. Results show that the percentage of adults has a positive effect on the unemployment rate which makes sense since the unemployed population is primarily composed of working aged citizens and not dependants such as youth and senior citizens. Flood areas in the city of Des Moines also have higher rates of unemployment. Finally, findings show that the underemployment variable positively affects the unemployment level of a block group. I interpret this to mean that the underemployment variable is a proxy for lower skilled laborers which means that block groups that have lower skilled laborers tend to have higher unemployment rates on average, all else equal. The city fixed effects seem to not be a determinant to unemployment when I introduce the underemployment variable.

Table 8 reports the unemployment results for the census tract models. Model (1) uses education, race, poverty rates, age, and city fixed effects as control factors. Model (2) is the base model controlling for the Des Moines flood; model (3) reports the base model controlling for the Des Moines flood and underemployment, and finally model (4) reports the base model controlling for the Des Moines flood, underemployment, and the

same resident rate. Notice that the coefficient of the key variable of interest, redevelopment, is statistically significant in all models. Notice also that model (3) gives the best fit according to the adjusted R-square; I therefore use and refer to model (3) in all my preceding analysis. In this model, all coefficients are statistically significant except the high school education variable.

According to this model, the redevelopment coefficient is -0.016 which shows that redevelopment decreases the unemployment rate in a census tract by 1.6 percentage points on average all else equal. Estimates show that on average a 10% increase in the population with some college education will decrease the unemployment rate by 0.63%, all else equal. The poverty, black, adult, flood, and underemployment variables all increase the unemployment rate in a census tract as expected. Results show that a 10% increase in the poverty rate of a census tract will increase unemployment by 2.9%, all else equal; a 10% increase in the fraction of the black population will increase the unemployment rate by 0.32%, all else equal; a 10% increase in the fraction of adults in a census tract will increase the unemployment rate by 0.8%, all else equal; that census tracts which were flooded in the city of Des Moines will increase the unemployment rate by 0.29%, all else equal, and finally a 10% increase in the fraction of part time workers in a census tract will increase the unemployment rate by 1.9%, all else equal.

CHAPTER 6 - Conclusion

Municipalities use redevelopment projects to reduce the physical and economic deterioration of business and commercial districts. In the process, these projects affect household well-being. I examine two measures of household well-being in this thesis, those being the value of owner-occupied property and the unemployment rate. Using household and population data provided by the U.S. Census Bureau and city level redevelopment data gathered from individual cities over the years 1990 through 2000, I investigate the impact of municipally assisted urban redevelopment on these measures.

I find that redevelopment has a positive impact on house values at both the block group and census tract level. That is, redevelopment projects undertaken between the years 1990 through 2000 in the cities of Des Moines, Wichita, Kansas City, Saint Louis, Omaha, Lincoln, and Milwaukee raise the median house value of a block group by $5,985 on average, all else equal and raise the median house value of a census tract by $5,688 on average, all else equal. These effects can only be observed when taking into account specific population and household characteristics such as income, education, race, age, age of house, and city fixed effects.

I find that redevelopment has a negative impact on the unemployment rate at the census tract level. Specifically, redevelopment projects undertaken between the years 1990 through 2000 in the cities of Des Moines, Wichita, Kansas City, MO., Saint Louis, Omaha, Lincoln, and Milwaukee, decreases the unemployment rate in a census tract by 1.6 percentage points on average, all else equal. These effects can only be observed when taking into account specific population and household characteristics such as

education, poverty rate, race, age, city fixed effects and underemployment. However, I cannot find that redevelopment plays any significant role in reducing the unemployment rate at the block group level. These results are sensible in the following way. People do not necessarily work in the block group in which they live. The census tract is a larger geographic area, and thus picks up the employment effects of redevelopment more accurately than the block group, since it allows people to live next to a redeveloped block group and benefit from the employment created by the redevelopment in the block group.

Therefore, I conclude that redevelopment plays a role in increasing the value of homes for those who reside within the area of redevelopment. It also seems to play a role in decreasing the unemployment rate for those households residing in the census tracts where redevelopment has occurred. The implications of these findings are that redevelopment is good for homeowners and laborers. Business incentive programs and infrastructure improvement projects serve to subsidize and attract commerce to the area, increase tax revenues and, according to my findings, improve the well-being of residents by boosting house values (typically a household's greatest asset) and lowering the unemployment rate, presumably by creating jobs for residents.

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Appendix A - City Contacts

In undertaking the task of gathering information on redevelopment projects in large cities throughout the Midwest, I face the problem of determining who or what source I should use to gather information from each city. Initially I called directly to each of the cities' administrative offices and asked if I could speak to someone who could tell me about redevelopment projects their cities had undertaken in the 1990s. Eventually, each directed me to a city administrator or a director of a private or public development department who was able to provide supportive documentation and briefly explain the redevelopment projects their city had assisted in during that time.

From the city of Des Moines, Iowa, Andrea Hauer who is with the Des Moines, Iowa office of Economic Development. She emailed me two documents which listed redevelopment projects that occurred in downtown Des Moines in the 1990s. Using the addresses listed, I am able to determine which block-groups and census tracts are redeveloped. However, some of these projects were solely private investments so I need to sort out which are undertaken by private entities and which are assisted by public entities, which I hope I successfully did. After speaking with Des Moines public employees, I was alerted that there had been a flood in the city in 1993. Floods or any natural disasters stand to throw off results unless accounted for because the flood may generate rebuilding and redevelopment in an area not for the purpose of city economic revitalization efforts. I eventually got in contact with Pamela Cooksey, the Deputy City Engineer - Design and Construction from the City of Des Moines. She sent me a CD that included a map of the city of Des Moines at the high flood stage in 1993. From this I was

able to identify which block-groups were flooded in 1993 by cross referencing the flood map with the U.S. Census Bureau's 2000 Thematic Maps.

From the city of Wichita, Kansas, is contacted Mark Elder, a development analyst in Wichita's Urban Development Office. He emailed me a TIF district map and Wichita's report: "The Use and Performance of Tax Increment Financing By the City of Wichita 1991-2008" which allowed me to cross-reference and then identify which block-groups and census tracts in Wichita had redevelopment projects in the 1990s.

From Kansas City, Missouri, I spoke with the Vice president of Development Strategies Missy Wilson and Manish Patel Development Services Specialist from the Economic Development Corporation of Kansas City. They referred me to the Kansas City Economic Development Corporation website which had a list of all TIF plans and Amendments the city has undertaken. They also emailed me a list of the dates that each of these projects were enacted so I could quickly determine which projects to analyze.

I got in contact with Dale Ruthsatz, the Commercial Development Director of the Saint Louis Development Corporation. He emailed me two lists of TIF projects Saint Louis implemented from 1990 through 1999.

For the City of Omaha Nebraska, I contacted with Kenneth Johnson, the Economic Development Manager for the city's Planning Department who put me in contact with Elisabeth Smith. She emailed me a PDF map of all the TIF districts that were created in Omaha from 1990 through 2000. This map came complete with census tract numbers already labeled which made the process of identification much easier.

Opal Doerr, the Planning Assistant for the City of Lincoln Nebraska's Urban Development Department, supplied a list of specific areas the City of Lincoln

redeveloped in the 1990s. I could then quickly identify which projects occurred during this decade on the city of Lincoln Urban Development Department's website of which contained reports on all the redevelopment projects they have undertaken. She also even took some time to find the census tract identifiers for a few of the redevelopment areas that were hard to determine.

Finally, for the City of Milwaukee, I spoke with David Misky, the Assistant Executive Director-Secretary of the Department of City Development who showed me Milwaukee's Department of City Development website. This listed all the TIF projects in chronological order and included a reference map of the locations of these projects.

Appendix B - Data Sources

In preparing for this econometric analysis, I gather data from three sources. One is from the ICPSR's data files on household data from the 2000 Census Summary File 3, provided by the U.S. Census Bureau, another is from the U.S. Census Bureau American FactFinder where I use thematic maps and Metropolitan Statistical Areas codes; the third gathered from individual cities.

I download 2000 Summary File 3 data from the ICPSR. These data sets provided me with very comprehensive population and housing data at the block group and census tract levels for the census year 2000. I use the U.S. Census Bureau's American FactFinder 2000 data set of detailed tables, found on their website, to identify which block-groups and census tracts are within the cities I am studying. I include in my data set all the census tracts that were completely or partially contained in the study cities. I then use Metropolitan Statistical Areas codes provided by the U.S. Census Bureau to code each observation's state and county FIPS code. Given the location of redevelopment areas from the city contacts, I use the American FactFinder's thematic maps to locate what census tracts or block groups correspond to these redeveloped areas.

I contacted individuals from the cities of Des Moines Iowa, Wichita Kansas, Kansas City Missouri, Saint Louis Missouri, Lincoln Nebraska, and Omaha Nebraska via emails and phone conversations and they provided for me either an electronic document, a webpage, or an electronic map that included the information of the location, the year, and the type of mixed-use or commercial public redevelopment projects their cities had

undertaken between the years 1990 and 2000. For detailed description of city contacts see Appendix A.

Appendix C - Constructing Variables

I had to find unique economic indicators for the block groups and census tracts of every city. Using ICPSR, I download the 2000 Summary File 3 (study number 13576) and 1990 Summary File 3 (study number 09782). For the 1990 Census data, I have to make sure to use the summary level 150 data in order to get unique information for each observation. I sort the data first by State FIPS, County FIPS, Census Tract, and Block Group codes for each observation. I clean out the data by first dropping any observations which do not match the state and county FIPS codes of my study group. I merge this Census level data set with the City level data set I created by merging the observations by their unique State FIPS, County FIPS, Census Tract, and Block Group identifier. I am left with unique economic indicators for each of the block-groups and census tracts in my study cities. Of the 2727 block group observations my city level data set had, 2724 had a corresponding U.S. Census Bureau economic indicator match. Of these 2724 observations, I cleaned out any observations that had missing data across all variables (example: no information provided or 0's listed as median household income). This left me with 2705 observations. After sorting this out, it was much easier to work with the data. I performed the same process with the census tract data which left me with 890 observations. Using the Data-dictionaries for each of the summary files, we were able to identify the code numbers for each variable and the corresponding names of each variable. Again, I clean out all variables that I am not interested in, leaving only data that I am using for creating the economic indicator variables.

Cities provided for me either a map, street names that surrounded the redevelopment area or specific addresses of the redevelopment projects (see appendix A for sources). Using thematic maps from the U.S. Census Bureau's 2000 census, I locate the block-groups' and census tracts' that these projects are located. I then code up data of block group and census tract observations of all the cities in the sample identified first by the state FIPS code, then county FIPS code, then census tract number, then block group number. I then create an indicator variable for each observation that takes on the value of 1 if the city indicates there was a redevelopment project established inside the particular block-group or census tract between the years 1990 through 2000 and 0 otherwise:

Redevelopment = 1 if city indicated redevelopment in that area
0 if otherwise

In order to fully evaluate the residential effects of redevelopment projects, I use a set of economic variables for each census tract and block group observation taken from U.S. Census Bureau Summary File 3 data. Because Summary File 3 provides raw data from thousands of block groups around the country about thousands of different types of variables, I have to construct a set a variables so they are in a form that can be analyzed. This section explains what raw data was taken from the 2000 Summary File 3 and how I constructed the variables I use in my analysis.

I use median value of owner-occupied housing units as an indicator for residents' house values. 2000 Census Summary File 3 includes Median Value for Owner-occupied Housing Units (code H85) for each block-group and census tract for the year 1999. I measure in terms of 2003 U.S. dollars:

House Value = House Value/CPI index

House Value 2000 = (H85_1)/0.91

I use median household income as an indicator for residents' income values. 2000 Census Summary File 3 includes Median Household Income (code P53) for each block-group and census tract for the year 1999. I measure in terms of 2003 U.S. dollars:

Income = Income/CPI index

Income 2000 = (p53_1)/0.91

I use median gross rent of renter-occupied housing units as an indicator for rent values. 2000 Census Summary File 3 includes Median Gross Rent (code H63) for each block-group and census tract for the year 1999. I measure in terms of 2003 U.S. dollars:

Rent = Rent/CPI index

Rent 2000 = (H63_1)/0.91

I use the travel time to work average as an indicator for the amount of time required for the average resident in an area to travel to their place of work. 2000 Census Summary File 3 contains stratified data on the number of workers 16 years and over for each of the time interval categories (code P31). These categories ranged between 5 to 30 minute intervals. To construct the average time it took for citizens within each block group or census tract to travel to work I take the weighted average of the block-group's travel time to work. Since each category was an interval of time and not a specific time, I first find the average of that time interval. In the last category which lists any workers' travel time to be 90 minutes or more, I set an arbitrary upper bound of 120 minutes (not

many workers ever commute a time greater than this) which made the average of the travel time to work for that category to be 105 minutes. I then weight the average of that time interval by the number of workers who fall into that time interval. I could also factor in workers that worked out of their home and did not commute because this data also had the added benefit of containing a category of workers that worked at home hence having a zero travel time. After summing all the weighted averages of the time intervals, I divide the sum by the total working population 16 years and above of the block group or census tract to find the average travel time to work of that area:

Average Travel Time =

$$\frac{\textit{(Sum of the weights of the average Travel Time for each category)}}{\textit{Total Working Population}}$$

Average Travel Time 2000 =

((2.5* p31_3)+(7* p31_4)+(12* p31_5)+(17* p31_6)+(22* p31_7)+(27* p31_8)+(32* p31_9)+(37* p31_10)+(42* p31_11)+(52* p31_12)+(74.5* p31_13)+(105* p31_14))/(p31_1)

I use the fraction of citizens without a high school diploma, the fraction of citizens with a high school diploma, and the fraction of citizens with at least some college schooling as indicators for the education level of a block group or census tract. 2000 Census Summary File 3 contains stratified data on the number of individuals 25 years and over for each of the varying levels of educational attainment the Census Bureau divides them into (code P37). These education levels are generally divided by grade level or degree completion. To construct the fraction of individuals who fit into one of the three education categories, I divide the number of individuals within a particular educational

attainment level in the region by the total number of individuals who resided within that region.

$$\%\ in\ Education\ Level = \frac{Number\ of\ Individuals\ in\ that\ Education\ Category}{Total\ Population}$$

% No High School Diploma 2000 =

(p37_3 +p37_4 +p37_5 +p37_6 +p37_7 +p37_8 +p37_9 +p37_10 +p37_20 +p37_21 +p37_22 +p37_23 +p37_24 +p37_25 +p37_26 +p37_27)/(p37_1)

% High School Diploma 2000 =

(p37_11 + p37_28)/(p37_1)

% College 2000 =

(p37_12 +p37_13 +p37_14 +p37_15 +p37_16 +p37_17 +p37_18 +p37_29 +p37_30 +p37_31 +p37_32 +p37_33 +p37_34 +p37_35)/(p37_1)

I use the fraction of the civilian labor force 16 years old and over who are unemployed as an indicator for unemployment within an area. 2000 Census Summary File 3 data contains stratified information on the number of individuals 16 years old and over for each of the employment categories (codes P43). I only analyze those who are of the civilian population. I divide the number of civilians who are unemployed by the total civilian labor force who resided within that region:

$$\%\ Unemployed = \frac{Number\ of\ Unemployed\ Civilian\ Labor\ Force}{Total\ Civilian\ Labor\ Force}$$

% Unemployed 2000 = (p43_7 + p43_14)/(p43_5 + p43_12)

I use the fraction of the working population that work less than 35 hours a week or work less than 40 weeks a year as an indicator for underemployment within an area. 2000 Census Summary File 3 data contains information on the number of individuals 16 years old and over stratified by work status by usual hours worked per week for years 1999 (code P47). I divide the numbers of workers who worked less than 35 hours per week or less than 40 weeks a year by the total population that worked in that area for that year:

$$\% \text{ Underemployed} = \frac{\text{Number of Part Time Workers}}{\text{Total Work Force}}$$

% Underemployed 2000 =

(p47_11+p47_18 + p47_8 + p47_9 + p47_10 +p47_35 + p47_42 + p47_32 + p47_33 + p47_34)/(p47_3 + p47_27)

I use the fraction of the population below the poverty level as an indicator for poverty within an area. 2000 Census Summary File 3 data contains information on the number of individuals for whom poverty status is determined stratified by age group categories for years 1999 (code P87). I divide the numbers of individuals of all age groups who are below the poverty level by the total number of individuals for whom poverty status is determined within a region. I also created a poverty variable that specifically looked at the child poverty rate. Since strong social capital has been shown to provide positive economic benefits for communities and at risk youth (children who usually come from low-income households) typically have a greater disadvantage for contributing to social capital in their communities. I am interested to see if redevelopment projects had any significant affect on the child poverty rate. Since the

poverty population was already separated by age, I summed the number of youth below the poverty level in each block-group who were below the age of 18:

$$\%\ Poverty = \frac{Number\ of\ individuals\ below\ Poverty\ Level}{Total\ Population}$$

% Poverty 2000 = (p87_2)/(p87_1)

% Child Poverty 2000 =

(p87_3 + p87_4 + p87_5 + p87_6)/(p87_1)

I use the fraction of white individual and the fraction of black individuals as indicators for race within an area. 2000 Census Summary File 3 data contains information on the number of individuals with each race (code P6). I divide the number of white individuals by the total population within a region. I also divide the number of black individuals by the total population within a region:

% White 2000 = (p6_2)/(p6_1)

% Black 2000 = (p6_3)/(p6_1)

I use the fraction of youth aged citizens, working aged citizens, and retirement aged citizens as indicators of the age structure of within an area. 2000 Census Summary File 3 data contain information on the number of individuals of each age group category (code P8). I divide the number of individuals age 17 (minors) and below by the total population within a region. I also divide the number of working age individuals (adults) age 18 through 64 by the total population within a region. Finally, I divide the number of individuals age 65 and older (senior citizens) by the total population within a region:

% of Age Group = Number of Individuals in that Age Group / Total Population

% Minor 2000 =

(p8_3+ p8_4 + p8_5 + p8_6 + p8_7 + p8_8 + p8_9 + p8_10 + p8_11 + p8_12+ p8_13 + p8_14 + p8_15 + p8_16 + p8_17 + p8_18 + p8_19 + p8_20+ p8_21 + p8_42 + p8_43 + p8_44 + p8_45 + p8_46 + p8_47 + p8_48 + p8_49+ p8_50 + p8_51 + p8_52 + p8_53 + p8_54 + p8_55 + p8_56 + p8_57+ p8_58 + p8_59 + p8_60)/(p8_1)

% Adult 2000 =

(p8_22 + p8_23 + p8_24 + p8_25 + p8_26 +p8_27 +p8_28 +p8_29 +p8_30 + p8_31 +p8_32 +p8_33 +p8_34 +p8_61 +p8_62 +p8_63 +p8_64 +p8_65 + p8_66 +p8_67 +p8_68 +p8_69 +p8_70 +p8_71 +p8_72 +p8_73)/(p8_1)

% Senior 2000 =

(p8_35 +p8_36 +p8_37 +p8_38 +p8_39 +p8_40 +p8_74 +p8_75 +p8_76 + p8_77 +p8_78 +p8_79)/(p8_1)

I use the fraction of vacant housing units as an indicator for vacancy rates within an area. 2000 Census Summary File 3 data contain information on the number of housing units that are either occupied of vacant (codes H5). I divide the number vacant housing units by the total number of housing units in within a region:

% Vacant = Number of Vacant Housing Units / Total Housing Units

% Vacant 2000 = (h6_3)/(h6_1)

I use the fraction of residents who have remained in the same household since 1995 as an indicator for ownership duration rate. 2000 Census Summary File 3 data

contain information on the number of individuals who have remained in the same household since 1995 (codes P25). I divide the number individuals living in the same house since 1995 by the total population within a region:

$$\% \text{ With 1995 House} = \frac{\text{Number still Living in 1995 House}}{\text{Total Population}}$$

% With 1995 House 2000 = (p25_3)/(p25_2)

I use the median year structure built for housing units as indicators for the age structure of houses within an area. 2000 Census Summary File 3 data contain information on the median age of structures in each block group and each census tract (codes H35 a). The age of the structures is recorded by the median year the structure is built, from 1940 through 1999. All areas that have a median year built of 1939 or earlier are lumped into one category. Since factoring a numerical year into my model would not be helpful, I create indicator variables where they fall into one of four different time categories depending on the median age of the structures within that block group or census tract. In the first category, the block group or census tract takes on the value of 1 if the median year built of the houses is 1939 or earlier and 0 otherwise; an indicator that takes on the value of 1 if the area's median year built for the owner-occupied unit was between 1940 and 1959 and 0 otherwise; an indicator that takes on the value of 1 if the area's median year built for the owner-occupied unit was between 1950 and 1979 and 0 otherwise; and an indicator that takes on the value of 1 if the area's median year built for the owner-occupied unit was between 1980 and 1999 and 0 otherwise:

Median Year Built 2000 = h35_1

Built before 1940 = 1 if h35_1 < 1940
0 if otherwise

Built in 1940 to 1959 = 1 if h35_1 $\in$ [1940, 1950)
0 if otherwise

Built in 1960 to 1979 = 1 if h35_1 $\in$ [1960, 1980)
0 if otherwise

Built in 1980 to 1999 = 1 if h35_1 $\in$ [1980, 2000)
0 if otherwise

I use the county FIPS code for all the counties that reside within a study city to identify which observations are parts of each municipality. I identify observations by municipality to control for city fixed affects. I do not worry about observations that are a part of the county data but not within a municipality because when I merge the City level and Census data, all observations that do not have a matching census tract and block group identifier are dropped. Since factoring a numerical FIPS code into my model would not be helpful, I create indicator variables where they fall into one of seven different categories depending what city the observations come from. In the first category, the block group or census tract takes on the value of 1 if the observation has a county FIPS of 153 (Polk county for the city of Des Moines) and 0 otherwise; an indicator that takes on the value of 1 if the observation has a county FIPS of 173 (Sedgwick county for the city of Wichita) and 0 otherwise; an indicator that takes on the value of 1 if the observation has a county FIPS of 37, 47, 95, or 165 (Cass, Clay, Jackson, and Platte counties for Kansas City) and 0 otherwise; an indicator that takes on the value of 1 if the observation has a county FIPS of 510 (Saint Louis is an independent city) and

0 otherwise; an indicator that takes on the value of 1 if the observation has a county FIPS of 55 (Douglas county for the city of Omaha) and 0 otherwise; an indicator that takes on the value of 1 if the observation has a county FIPS of 109 (Lancaster county for the city of Lincoln) and 0 otherwise; an indicator that takes on the value of 1 if the observation has a county FIPS of 79, 131, 133 (Milwaukee, Washington, and Waukesha counties for the city of Milwaukee) and 0 otherwise:

Des Moines =	1 if County FIPS = 153 0 if otherwise
Wichita =	1 if County FIPS = 173 0 if otherwise
Kansas City =	1 if County FIPS = 37, 47, 95, or 165 0 if otherwise
Saint Louis =	1 if County FIPS = 510 0 if otherwise
Omaha =	1 if County FIPS = 55 0 if otherwise
Milwaukee =	1 if County FIPS = 79, 131, 133 0 if otherwise

I create an indicator interaction variable to show which regions have been affected by the 1993 Des Moines flood. Using the flood map on the CD that Pamela Cooksey, the Deputy City Engineer, sent me, I am able to identify which block-groups or census tracts were flooded in 1993 by cross referencing the flood map with the U.S. Census Bureau's 2000 Thematic Maps. I control for the flooding with an indicator variable for each

observation that equals 1 if the area was flooded and 0 if otherwise. Since this flood only occurred in the city of Des Moines, multiply this indicator variable by the Des Moines city fixed effects indicator to create a Flood/Des Moines interaction variable:

Flood = 1 if block group or county was flooded
0 if otherwise

Flood Des Moines = (*Flood)* * (*Des Moines*)

Appendix D - Tables

Table 1. Data Sources

Data Source	Variable
City Governments	Redevelopment indicator (generated using city reports and contacts), Des Moines Flood indicator (generated using 1993 Des Moines Flood Map).
American Fact Finder	Thematic maps (contain the geographical boundaries of block groups and census tracts for all cities in the U.S. for the 2000 decennial census), MSA indicator (generated using the state and county FIPS codes).
Census Bureau SF3 2000	Median value of owner-occupied housing units, unemployment rate for the civilian portion of the labor force, fraction of population with a high school degree, fraction of population with some college education, fraction of population below the poverty rate, fraction of the population that are black, fraction of the population age 18-64, fraction of the population age 65 and above, fraction of the buildings built in 1939 or earlier, fraction of the buildings built in 1940 to 1959, fraction of the buildings built in 1960 to 1979, fraction of the buildings built in 1980 to 1999, fraction of the housing units that are vacant, fraction of the labor force that works part-time fraction of residents that live in the same home since 1995

Table 2. Number of Block Groups and Tracts by City and Redevelopment Status, Year 2000.

City Name	Total Number of Tracts	% of City Tracts	Number of Tracts Redeveloped*	% of City Tracts Redeveloped*	Total Number of Block Groups	% of City Block Groups	Number of Block Groups Redeveloped*	% of City Block Groups Redeveloped*
Des Moines	56	6.3	1	0.8	206	7.6	4	2.3
Wichita	103	11.6	4	3.2	319	11.8	8	4.6
Kansas City	192	21.6	41	32.8	492	18.2	47	26.9
Saint Louis	111	12.5	7	5.6	435	16.1	8	4.6
Omaha	139	15.6	40	32.0	450	16.6	61	34.9
Lincoln	54	6.1	11	8.8	173	6.4	19	10.9
Milwaukee	235	26.4	21	16.8	630	23.3	28	16.0
Sample Size	890	100.0	125	100.0	2705	100.0	175	100.0

Note: (i) * indicates between 1990 and 2000. (ii) The sample is constructed using U.S. Census Bureau 2000 Summary File 3 data and data collected from the cities on redevelopment by the author.

Table 3. Block Group Means for Full Sample and by Redevelopment Status, Year 2000

Variable Name	Full Sample	Redeveloped	Not Redeveloped
House Value	$92,082	$92,379	$92,063
Log Value	11.3	11.2	11.3
Income	$41,872	$34,223	$42,396
Log Income	10.5	10.3	10.5
Median Rent	$610	$580	$612
% Redevelopment	6.47	1	0
Average Travel Time (min)	22.4	20.8	22.5
% No High School Diploma	21.1	23.5	21.0
% High School Diploma	29.0	28.0	29.1
% College	49.8	48.5	49.9
% Unemployed	8.21	9.82	8.10
% Poverty	16.7	22.2	16.3
% Child Poverty	6.29	6.49	6.27
% White	63.7	59.8	63.9
% Black	27.2	27.6	27.2
% Minor	27.6	23.1	27.9
% Adult	60.3	66.3	59.9
% Senior	12.2	10.5	12.3

Table 3. Block Group Means for Full Sample and by Redevelopment Status, Year 2000 (continued)

Variable Name	Full Sample	Redeveloped	Not Redeveloped
Median Year Built	1955	1955	1955
% Built before 1940	26.4	32.6	25.9
% Built in 1940 to 1959	40.3	28.6	41.1
% Built in 1960 to 1979	23.4	29.1	23.0
% Built in 1980 to 1999	9.76	8.57	9.84
% Des Moines	7.62	2.29	7.98
% Wichita	11.8	4.57	12.3
% Kansas City	18.2	26.9	17.6
% Saint Louis	16.1	4.57	16.9
% Omaha	16.6	34.9	15.4
% Lincoln	6.40	10.9	6.09
% Milwaukee	23.3	16.0	23.8
% Flood Des Moines	1.11	1.14	1.11
% Underemployed	32.9	37.5	32.6

Note: (i) Sample size is 2705 block groups in 7 Midwestern Cities. (ii) All monetary values are expressed in 2003 U.S. dollars. (iii) The sample is constructed using U.S. Census Bureau 2000 Summary File 3 data and data collected from the cities on redevelopment by the author.

Table 4. Means for Full Sample and by Redevelopment Status for Census Tracts, Year 2000

Variable Name	Full Sample	Redeveloped	Not Redeveloped
House Value	$94,798	$95,430	$94,700
Log Value	11.31	11.26	11.31
Income	$41,199	$34,440	$42,292
Log Income	10.52	10.36	10.55
Median Rent	$604	$574	$609
Redevelopment	14.0	100	0
Average Travel Time (min)	22.4	20.9	22.6
% No High School Diploma	21.2	22.9	20.9
% High School Diploma	28.4	28.1	28.4
% College	50.4	49.0	50.6
% Unemployed	8.7	9.84	8.51
% Poverty	17.34	21.87	16.6
% Child Poverty	6.37	6.25	6.39
% White	62.7	61.0	63.0
% Black	27.8	26.4	28
% Minor	27.4	23.1	28.1
% Adult	60.9	66.7	60.0
% Senior	11.7	10.2	12
Median Year Built	1956	1953	1957
% Built before 1940	26.29	35.2	24.8
% Built between 1940 and 1959	36.97	35.2	37.3
% Built between 1960 and 1979	25.5	24.8	25.6
% Built between 1980 and 1999	11.2	4.80	12.3

Table 4. Means for Full Sample and by Redevelopment Status for Census Tracts, Year 2000 (continued)

Variable Name	Full Sample	Redeveloped	Not Redeveloped
% Des Moines	6.29	0.80	7.19
% Wichita	11.57	3.20	12.94
% Kansas City	21.57	32.8	19.74
% Saint Louis	12.5	5.60	13.6
% Omaha	15.6	32.0	12.9
% Lincoln	6.10	8.80	5.62
% Milwaukee	26.4	16.8	27.97
% Flood Des Moines	2.02	0.80	2.22
% Vacancy	8.78	9.78	8.62
% Underemployed	33.7	37.6	33.1
% With 1995 House	49.45	41.7	50.7

Note: (i) Sample size is 890 census tracts in 7 Midwestern Cities. (ii) All monetary values are expressed in 2003 U.S. dollars. (iii) (iii) The sample is constructed using U.S. Census Bureau 2000 Summary File 3 data and data collected from the cities on redevelopment by the author.

Table 5. Determinants of House Value for Block Groups, Year 2000.

	Coefficient Estimates and Standard Errors					
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Linear	Log	Semi Log	Linear Flood	Log Flood	Semi Log Flood
Income	1.47*			1.47*		
	(0.067)			(0.068)		
Log Income		0.29*	3.61*		0.29*	3.60*
		(0.022)	(0.33)		(0.022)	(0.33)
Redevelopment	1.24*	0.065**	1.08*	1.24*	0.065**	1.08*
	(0.26)	(0.025)	(0.38)	(0.36)	(0.025)	(0.38)
% College	9.78*	1.45*	14.27*	9.78*	1.45*	14.28*
	(0.69)	(0.048)	(0.72)	(0.70)	(0.048)	(0.72)
% Unemployed	3.77*	-0.13	4.20*	3.76*	-0.14	4.16*
	(1.39)	(0.10)	(1.52)	(1.39)	(0.10)	(1.52)
% Black	-0.10	-0.22*	-1.12*	-0.10	-0.22*	-1.12*
	(0.37)	(0.027)	(0.40)	(0.37)	(0.027)	(0.40)
% Adult	3.93*	-0.009	-2.14	3.92*	-0.012	-2.17
	(1.30)	(0.091)	(1.35)	(1.31)	(0.091)	(1.36)
% Senior	6.64*	0.49*	3.30**	6.64*	0.48*	3.28**
	(1.29)	(0.092)	(1.37)	(1.29)	(0.092)	(1.37)

Table 5. Determinants of House Value for Block Groups, Year 2000 (Continued)

	Coefficient Estimates and Standard Errors					
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Linear	Log	Semi Log	Linear Flood	Log Flood	Semi Log Flood
Built between 1940 and 1959	-0.39***	0.014	-0.31	-0.39***	0.014	-0.31
	(0.22)	(0.016)	(0.23)	(0.22)	(0.016)	(0.23)
Built between 1960 and 1979	0.13	0.12*	0.36	0.13	0.12*	0.36
	(0.26)	(0.018)	(0.27)	(0.26)	(0.018)	(0.27)
Built between 1980 and 1999	0.87**	0.19*	2.38*	0.87**	0.19*	2.39*
	(0.36)	(0.025)	(0.38)	(0.36)	(0.025)	(0.38)
Des Moines	-5.66*	7.42*	-35.69*	-5.67*	7.43*	-35.59*
	(0.99)	(0.25)	(3.77)	(0.99)	(0.25)	(3.77)
Wichita	-7.12*	7.16*	-37.47*	-7.11*	7.18*	-37.34*
	(0.95)	(0.25)	(3.73)	(0.95)	(0.25)	(3.73)
Kansas City	-5.58*	7.36*	-35.42*	-5.57*	7.38*	-35.29*
	(0.99)	(0.25)	(3.77)	(0.99)	(0.25)	(3.78)
Saint Louis	-4.64*	7.51*	-34.55*	-4.63*	7.53*	-34.43*
	(1.01)	(0.25)	(3.76)	(1.01)	(0.25)	(3.76)
Omaha	-5.69*	7.35*	-35.58*	-5.68*	7.36*	-35.46*
	(0.95)	(0.25)	(3.74)	(0.96)	(0.25)	(3.75)

Table 5. Determinants of House Value for Block Groups, Year 2000 (Continued)

	Coefficient Estimates and Standard Errors					
	(1) Linear	(2) Log	(3) Semi Log	(4) Linear Flood	(5) Log Flood	(6) Semi Log Flood
Lincoln	-5.79*	7.34*	-36.27*	-5.78*	7.35*	-36.15*
	(0.99)	(0.25)	(3.71)	(0.99)	(0.25)	(3.72)
Milwaukee	-4.24*	7.54*	-34.24*	-4.23*	7.55*	-34.11*
	(0.96)	(0.25)	(3.76)	(0.96)	(0.25)	(3.77)
Flood Des Moines				0.14	0.060	0.32
				(0.84)	(0.061)	(0.89)
Adjusted R2	0.8557	0.9993	0.8371	0.8556	0.9993	0.8381

Note: (i) Sample size is 2705 block groups in 7 Midwestern Cities. (ii) Standard errors are represented in parentheses. (iii) *, **, *** indicate significance at the .01, .05 and .10 levels, respectively. (iv) The sample is constructed using U.S. Census Bureau 2000 Summary File 3 data and data collected from the cities on redevelopment by the author.

Table 6. Determinants of House Value for Census Tracts, Year 2000.

	Coefficient Estimates and Standard Errors						
Variable	(1) Linear	(2) Log	(3) Semi Log	(4) Log Vacancy	(5) Semi Log Vacancy	(6) Log Vacancy and Flood	(7) Semi Log Vacancy and Flood
Income	1.11*						
	(0.16)						
Log Income		0.14*	0.50	0.15*	1.25***	0.15*	1.25***
		(0.048)	(0.697)	(-0.27)	(0.71)	(0.048)	(0.72)
Redevelopment	0.88***	0.06***	0.72	0.06***	0.70	0.06***	0.70
	(0.51)	(0.031)	(0.53)	(0.031)	(0.52)	(0.031)	(0.52)
% College	12.64*	1.90*	18.99*	1.80*	19.17*	1.81*	19.17*
	(1.59)	(0.099)	(1.54)	(0.099)	(1.53)	(0.099)	(1.53)
% Unemployed	0.51	-0.18	2.12	-0.22	-0.85	-0.22	-0.86
	(2.38)	(0.20)	(3.15)	(0.21)	(3.21)	(0.21)	(3.22)
% Black	-0.53	-0.26*	-2.63*	-0.27*	-3.39*	-0.27*	-3.39*
	(0.81)	(0.051)	-0.85	(0.052)	(0.86)	(0.052)	(0.86)
% Adult	0.18	-0.16	-7.04**	-0.18	-8.14*	-0.18	-8.15*
	(2.89)	(0.19)	(2.97)	(0.19)	(2.96)	(0.19)	(2.96)
% Senior	5.30	0.25***	2.01	0.35***	1.50	0.35***	1.50
	(3.26)	(0.20)	(3.38)	(0.20)	(3.36)	(0.20)	(3.36)

Table 6. Determinants of House Value for Census Tracts, Year 2000 (continued).

	Coefficient Estimates and Standard Errors						
Variable	(1) Linear	(2) Log	(3) Semi Log	(4) Log Vacancy	(5) Semi Log Vacancy	(6) Log Vacancy and Flood	(7) Semi Log Vacancy and Flood
Built between 1940 and 1959	0.062	0.013	0.15	0.017	0.55	0.017	0.55
	(0.44)	(0.027)	(0.46)	(0.027)	(0.46)	(0.027)	(0.46)
Built between 1960 and 1979	0.36	0.14*	0.69	0.15*	1.05**	0.15*	1.05**
	(0.74)	(0.03)	(0.51)	(0.03)	(0.52)	(0.031)	(0.52)
Built between 1980 and 1999	0.93	0.19*	2.58*	0.19*	2.45*	0.19*	2.45*
	(0.74)	(0.044)	(0.75)	(0.044)	(0.74)	(0.044)	(0.74)
Des Moines	-2.88	8.98*	-1.82	8.88*	-9.90	8.88*	-9.92
	(2.13)	(0.55)	(8.13)	(0.56)	(8.30)	(0.56)	(8.31)
Wichita	-4.67**	8.69*	-4.03	8.58*	-12.60	8.59*	-12.63
	(2.04)	(0.54)	(8.03)	(0.55)	(8.24)	(0.56)	(8.24)
Kansas City	-3.01	8.90*	-1.67	8.80*	-10.10	8.80*	-10.07
	(2.17)	(0.55)	(8.15)	(0.56)	(8.34)	(0.56)	(8.34)
Saint Louis	-1.57	9.07*	-0.59	8.96*	-9.58	8.97*	-9.57
	(2.20)	(0.55)	(8.13)	(0.57)	(8.35)	(0.56)	(8.36)
Omaha	-2.36	8.88*	-1.33	8.78*	-9.48	8.79*	-9.48
	(2.05)	(0.54)	(8.06)	(0.55)	(8.24)	(0.56)	(8.24)

Table 6. Determinants of House Value for Census Tracts, Year 2000 (continued).

	Coefficient Estimates and Standard Errors						
Variable	(1) Linear	(2) Log	(3) Semi Log	(4) Log Vacancy	(5) Semi Log Vacancy	(6) Log Vacancy and Flood	(7) Semi Log Vacancy and Flood
Lincoln	-3.17	8.87*	-2.94	8.77*	-11.03	8.78*	-11.03
	(2.09)	(0.54)	(7.98)	(0.55)	(8.16)	(0.55)	(8.16)
Milwaukee	-1.56	9.09*	-0.65	9.0*	-8.34	9.0*	-8.34
	(2.07)	(0.54)	(8.10)	(0.56)	(8.26)	(0.56)	(8.27)
% Vacancy				0.18	14.89*	0.18	14.89*
				(0.22)	(3.66)	(0.22)	(3.66)
Flood Des Moines						0.023	0.052
						(0.083)	(1.41)
Adjusted R2	0.8218	0.9994	0.8143	0.9994	0.8176	0.9994	0.8213

Note: (i) Sample size is 890 census tracts in 7 Midwestern Cities. (ii) Standard errors are represented in parentheses. (iii) *, **, *** indicate significance at the .01, .05 and .10 levels, respectively. (iv) The sample is constructed using U.S. Census Bureau 2000 Summary File 3 data and data collected from the cities on redevelopment by the author.

Table 7. Determinants of Unemployment Rate for Block Groups, Year 2000.

Variable	(1) Base	(2) + Flood	(3) + Underemployment
Redevelopment	-0.0045	-0.0046	-0.0072
	(0.0051)	(0.0051)	(0.0050)
% High School Diploma	-0.050*	-0.050*	-0.043**
	(0.018)	(0.018)	(0.017)
% College	-0.094*	-0.094*	-0.095*
	(0.012)	(0.012)	(0.011)
% Poverty	0.28*	0.28*	0.21*
	(0.012)	(0.012)	(0.013)
% Black	0.051*	0.052*	0.051*
	(0.0051)	(0.0051)	(0.005)
% Adult	0.069*	0.068*	0.063*
	(0.014)	(0.014)	(0.014)
Des Moines	0.050*	0.046*	0.0082
	(0.014)	(0.014)	(0.014)
Wichita	0.041*	0.042*	0.0058
	(0.013)	(0.013)	(0.013)
Kansas City	0.040*	0.041*	0.0042
	(0.013)	(0.013)	(0.14)

Table 7. Determinants of Unemployment Rate for Block Groups, Year 2000 (continued)

Variable	(1) Base	(2) + Flood	(3) + Underemployment
Saint Louis	0.040*	0.040*	0.0037
	(0.013)	(0.013)	(0.013)
Omaha	0.038*	0.038*	-0.00047
	(0.013)	(0.013)	(0.013)
Lincoln	0.032**	0.032**	-0.011
	(0.014)	(0.014)	(0.014)
Milwaukee	0.043*	0.044*	0.0043
	(0.013)	(0.013)	(0.013)
Flood Des Moines		0.025**	0.026**
		(0.012)	(0.012)
Underemployed			0.16*
			(0.014)
Adjusted R2	0.7422	0.7424	0.7546

Note: (i) Sample size is 2705 block groups in 7 Midwestern Cities. (ii) Standard errors are represented in parentheses. (iii) *, **, *** indicate significance at the .01, .05 and .10 levels, respectively. (iv) The sample is constructed using U.S. Census Bureau 2000 Summary File 3 data and data collected from the cities on redevelopment by the author.

Table 8. Determinants of Unemployment Rate for Census Tracts, Year 2000.

Variable	(1) Base	(2) + Flood	(3) +Underemployment	(4) + Same Resident
Redevelopment	-0.015**	-0.015**	-0.016**	-0.015**
	(0.0062)	(0.0063)	(0.0061)	(0.0061)
% High School Diploma	0.018	0.016	0.029	0.027
	(0.034)	(0.034)	(0.033)	(0.034)
% College	-0.062*	-0.062*	-0.063*	-0.063*
	(0.021)	(0.021)	(0.020)	(0.021)
% Poverty	0.40*	0.40*	0.29*	0.30*
	(0.023)	(0.023)	(0.027)	(0.028)
% Black	0.031*	0.031*	0.032*	0.032*
	(0.0093)	(0.0093)	(0.0090)	(0.0092)
% Adult	0.11*	0.11*	0.080*	0.083*
	(0.028)	(0.028)	(0.027)	(0.030)
Des Moines	-0.021	-0.029	-0.060**	-0.066**
	(0.026)	(0.026)	(0.026)	(0.030)
Wichita	-0.030	-0.029	-0.058**	-0.063**
	(0.024)	(0.024)	(0.024)	(0.028)
Kansas City	-0.025	-0.024	-0.052**	-0.058**
	(0.025)	(0.025)	(0.024)	(0.029)

Table 8. Determinants of Unemployment Rate for Census Tracts, Year 2000 (Continued).

Variable	(1) Base	(2) + Flood	(3) +Underemployment	(4) + Same Resident
Saint Louis	-0.035	-0.035	-0.060**	-0.066*
	(0.025)	(0.024)	(0.024)	(0.029)
Omaha	-0.034	-0.033	-0.065*	-0.070**
	(0.024)	(0.024)	(0.024)	(0.029)
Lincoln	-0.043***	-0.042	-0.078*	-0.083*
	(0.026)	(0.026)	(0.026)	(0.030)
Milwaukee	-0.031	-0.030	-0.061**	-0.066**
	(0.024)	(0.024)	(0.024)	(0.028)
Flood Des Moines		0.028	0.029***	0.030***
		(0.017)	(0.016)	(0.016)
Underemployed			0.19*	0.19*
			(0.026)	(0.027)
Same Resident				0.0066
				(0.020)
Adjusted R2	0.7836	0.7874	0.7959	0.7957

Note: (i) Sample size is 890 census tracts in 7 Midwestern Cities. (ii) Standard errors are represented in parentheses. (iii) *, **, *** indicate significance at the .01, .05 and .10 levels, respectively. (iv) The sample is constructed using U.S. Census Bureau 2000 Summary File 3 data and data collected from the cities on redevelopment by the author.